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WHO CHRONICLE

VOL. 13, No. 2 - FEBRUARY 1959

International Work in Health Statistics—1
Malaria Eradication
The Public Health Nurse
Health Conditions in the Americas
Communicable Diseases in Africa
A New Light on Psittacosis
Non-Proprietary Names for Pharmaceuticals

WORLD HEALTH ORGANIZATION
PALAIS DES NATIONS
GENEVA

The World Health Organization (WHO) is one of the specialized agencies of the United Nations. Through this organization, which came into being in 1948, the public health and medical professions of more than 80 countries exchange their knowledge and experience, and collaborate in an effort to achieve the highest possible level of health throughout the world. WHO is not concerned with problems which individual countries or territories can solve with their own resources. It deals, rather, with problems which can only be satisfactorily solved through the co-operation of all, or certain groups of, countries—the eradication of diseases such as malaria, the control of cholera, plague, yellow fever, smallpox and rickettsiosis. Progress towards better health throughout the world also demands international co-operation in many other activities : for example, setting up standards for biological substances, for insecticides and insecticide spraying equipment ; compiling an international pharmacopoeia ; drawing up international sanitary regulations ; revising the international lists of diseases and causes of death ; assembling and disseminating epidemiological information ; recommending non-proprietary names for drugs ; and promoting the exchange of scientific knowledge. In many parts of the world, there is need for improvement in maternal and child health, nutrition, nursing, mental health, environmental sanitation, public health administration, professional education and training, and health education of the public. Thus a very large share of the Organization's resources is devoted to giving assistance and advice in these fields to countries and territories whose health services are in an early state of development and which are therefore weak points in the common front against disease.

- ***WHO Chronicle***

  (formerly *Chronicle of the World Health Organization*) published by WHO for the medical and public health professions, provides a monthly record of the principal health activities undertaken in various countries with WHO assistance. It also contains summaries and detailed accounts of the other publications issued by the Organization.
  The Chronicle is published in English, French, Spanish, Russian and Chinese.

- ***Bulletin of the World Health Organization***

  contains technical articles, in English or French, contributed by physicians and scientists engaged in public health work. It appears monthly and each issue runs to about 200 pages.

- ***World Health***

  an illustrated magazine for the general public, aims at giving an idea of WHO activities throughout the world and at showing some of the more striking aspects of public health work.
  This publication appears every two months in English, French, Spanish and Portuguese.

Other WHO publications: the *Technical Report Series*, the *Monograph Series*, the *Epidemiological and Vital Statistics Report*, the *International Digest of Health Legislation*, etc., are described in a catalogue which can be supplied free of charge on request.

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67 *International work in health statistics—1*

71 *Malaria eradication*

73 *The public health nurse*

77 *Health conditions in the Americas*

80 *Communicable diseases in Africa*

83 *A new light on psittacosis*

85 *Ataractic and hallucinogenic drugs in psychiatry*

87 *Nuclear energy, medical training and public health*

90 *Health education*

91 *Medical rehabilitation*

93 *Notification of communicable diseases*

95 *Notes and news*

103 *Review of WHO publications*

105 *Non-proprietary names for pharmaceuticals*

WORLD HEALTH ORGANIZATION

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INTERNATIONAL WORK IN HEALTH STATISTICS, 1948-1958

1. Historical Introduction

The Chronicle has on several occasions in the past published comprehensive accounts of WHO's work in various fields, including the treponematoses (1954, Vol. 8, No. 2-3), malaria (1955, Vol. 9, No. 2-3), disease control and international travel (1956, Vol. 10, No. 9-10), and bilharziasis (1959, Vol. 13, No. 1). The article that follows is the first part of an account of WHO's work in international health statistics by Dr H. S. Gear, formerly Assistant Director-General, Department of Central Technical Services, WHO, and Dr Y. Biraud, Director, Division of Health Statistics, WHO.

The general principles of the science of health statistics, as of most others, were foreshadowed by the ancient Greeks, who carefully observed, recorded and analysed natural phenomena, and applied the inductive method of reasoning in a search for natural rather than supernatural causes, treating the unproven with scepticism. Nevertheless, the proper understanding of the behaviour of disease—how and why disease in a human (or animal) population spreads, waxes and wanes, or alters its character in response to the ceaseless changes that take place in its host and environment—had to await the techniques of study and experiment provided by modern epidemiology, statistics, microbiology, and biochemistry.

It is a curious fact that the use of statistical techniques in this field began, not with doctors, but with the work of John Graunt, a London draper,[1] in the middle of the seventeenth century. Graunt carried out an examination of the London Bills of Mortality, which were records of births and deaths based on the parish registers. His findings, first published in 1662,[2] marked the beginning of a science which has shown that human life conforms to broad and predictable patterns. Epidemiology, vital statistics, demography, and even life insurance are greatly indebted to this small volume.

Parish registers—which provided the basic material for Graunt's book—had been in existence for a century or so, not only in England but also in a number of other European countries, and in their colonial possessions from the Philippines to Mexico and Peru. In France, the keeping of parish registers was made compulsory in 1539, and from 1670 on they were used by Colbert as a source of statistics for Paris. The Breslau registers enabled Halley, the astronomer, to construct his famous mortality table in 1692. From 1749 the Swedish registers, which had been made compulsory in 1686, were used for the preparation of annual statistics.

This statistical material supplemented, or even served as a substitute for, censuses. In France in 1788 Necker estimated the population by multiplying recorded births by 25.75, and Laplace, the mathematician, after making an early use of sampling methods, did the same in 1802 on the basis of a ratio of 28.35 births to 1000 population.

During the eighteenth century considerable interest developed in the numerical aspects of all matters of concern to the state, and in Germany, under the name of *Staatenkunde*, they became a regular subject for teaching in the universities. Achenwall, a professor at Göttingen, probably did most to spread the use of the word "statistics" to

[1] Gear, H. S. (1936) *Med. Offr*, 55, 217

[2] Graunt, J. (1662) *Natural and political observations mentioned in a following index, and made upon the Bills of Mortality*, London

designate the new science, but Süssmilch's book [3] played an important part in making it internationally known.

Statecraft had long recognized that knowledge of the numerical size of the population was essential to efficient administration. Censuses were taken in the earliest civilisations—for example, among the Sumerians, Egyptians and Romans and in the Chinese and Inca Empires. Only many centuries after the fall of the Roman Empire, however, were population counts again made in western Europe. These new censuses, such as those of 1328 in France and of 1594 in Spain, were little better than estimates, based upon the number of hearths in each parish and the rough proportion of inhabitants to each hearth.

The first modern census listing each inhabitant by name was probably that carried out in Canada (Quebec) in 1665. The same method was used in other French overseas possessions during the following century, long before a proper census was taken in France itself. Fairly accurate censuses were carried out in Sweden and Finland in 1749, in Connecticut in 1756, in Massachusetts in 1764, in Denmark and Norway in 1769, and in the United States as a whole in 1790. In England proposals for a census were rejected in 1753 and 1778, and the first census was not carried out until 1801, which was also the year of France's first census. Prussia followed suit in 1810 and Austria in 1818. During the period 1830-1850, there were so many people recording statistics and theorizing on statistical method that Westergaard justly called it "the era of enthusiasm for vital statistics".

In England the Royal Statistical Society was founded in 1833, and the General Register Office in 1834. A physician, William Farr (1807-1883), who held the post of examiner and compiler of abstracts in the General Register Office, was largely responsible for the publication, from 1837 on, of yearly statistics of causes of death, and for the regular computation, from 1841 on, of mortality tables for the whole population. In the opinion of Pearl, present-day procedures in official vital statistics owe more to Farr than to any other person,[4] and the memorial volume of selections from his reports and writings,[5] which shows the stress he laid, *inter alia*, upon the use of death rates as a measure of local or national health, the importance of population density, the dangers of overcrowding, and the value of uniform nomenclatures of disease, gives some idea both of his influence and of his pioneering spirit.

About the same time as Farr entered the General Register Office, much study was being devoted in Europe to the theory of probability, which is of fundamental importance in statistics. Laplace had published an important work on the subject (1814), and he was followed by Poisson (1836-37) and Cournot (1843). In France, Demonferrand published essays on population and on mortality in 1838 and 1839, and Gavarret a work on general principles of medical statistics in 1840. In Germany, Casper published a study on the probable duration of human life (1835), Moser one on the laws of the duration of life (1839), and Christian Bernoulli a statistical handbook on population (1840). Quetelet published a book on social physics in 1835, and did a great deal towards adapting the theory of probability for use in statistics. From 1851 onwards Quetelet, together with Farr and Babbage, began more and more to impart an international slant to vital and health statistics by organizing international statistical congresses.

The first international statistical congress was held in Brussels in 1853, and the need for uniform nomenclature and classification of diseases as a prerequisite for the international comparability of medical statistics was quickly realized. In the second congress held in 1955, Farr put forward for international adoption the classification into five classes that was in use in the General Register Office. D'Espine, from Geneva, put

[3] Süssmilch, J. (1761) *Die göttliche Ordnung in den Veränderungen des menschlichen Geschlechts aus der Geburt, dem Tode und der Fortpflanzung desselben erwiesen*, Berlin

[4] Pearl, R. (1940) *Introduction to medical biometry and statistics*, 3rd ed., Saunders, Philadelphia and London

[5] Humphreys, N. A. ed. (1885) *Vital statistics. A memorial volume of selections from the reports and writings of William Farr*, The Sanitary Institute, London

forward another list in which diseases were grouped according to their clinical or (as far as was then known) their etiological and pathological characteristics. After some discussion, the congress reached a compromise, adopting a classification which made use of both systems.

Later developments would seem to confirm that the decision taken by the congress was a wise one. International classifications of causes of death have been subjected to much critical scrutiny and revision since 1855, and of the many proposed lists, based on a single classification, whether anatomical, etiological, chronological or otherwise, none has proved any more practicable than the empirical grouping adopted in 1855.

International statistical congresses continued to meet in various capitals at two- or three-year intervals up to 1876, two years after Quetelet's death, when disagreement between some governments and the permanent commission of the congresses brought them to an end. Their place was taken by the International Institute of Statistics, which was created in London in 1885. At its meeting in Vienna in 1891 the Institute set up a committee to deal with the international list of diseases, with Dr Jacques Bertillon, Head of the Statistical Services of the City of Paris, as its chairman.

In 1893, on the suggestion of Guillaume, Director of the Federal Bureau of Statistics, Switzerland, the basic international classification was maintained, but three lists were drawn up for its application: a detailed list, an intermediate list, and an abridged list, containing 161, 99, and 44 titles respectively. The purpose of these lists was to maintain comparability between the statistics of countries in which facilities for the recording of diagnoses and for statistical processing differed widely.

In 1898 the American Public Health Association, meeting in Ottawa, recommended that the international lists be brought up to date by decennial revisions, and this principle was endorsed by the International Institute of Statistics in 1899 in Christiania. Decennial revision conferences were accordingly held in 1900, 1910 and 1920, and, through Bertillon's influence, they were held in Paris.

When Bertillon died, the 1920 revised international lists were left in abeyance, and it was not until 1924 that the Health Organisation of the League of Nations took up the question of continuing the work and completing their publication. It established a joint committee with the International Institute of Statistics for the preparation of the 1929 revision, which included extensive studies on morbidity and its classification. The same procedure was adopted for the 1938 revision. In 1945 the United States Government, which had been requested by the Fifth Revision Conference to continue its investigations into rules for the selection of joint causes of death, began preparing the sixth revision, and convened in Washington a small committee which included, in addition to experts from Canada and the United Kingdom, the former Head of the League of Nations Health Statistical Services.[6]

In 1947, WHO took over the work of preparing the sixth revision from the United States Government, and completed preparations for the Sixth Revision Conference, which took place in Paris in 1948, under the joint auspices of WHO and the French Government. The international lists of causes of disease and death then adopted were endorsed by the First World Health Assembly as an annex to WHO Regulations No. 1.

Continuous efforts have thus been made for more than a hundred years to bring about international uniformity in disease nomenclature and classification. Even if the related subjects of uniform certification of causes of death and selection of joint causes for the tabulation of both morbidity and mortality statistics are taken into account, the progress made in this field forms only a small part of the developments in health statistics that have taken place during the same period.

One of the great advances has been the publication by an increasing number of countries of annual returns of births and

[6] Dr Yves Biraud, who had been Assistant Secretary-General of the Fifth Revision Conference and had edited its official report

deaths, the latter classified according to the international lists and rules. Another is the production of census returns of increasing detail and precision, the result of the growing realization that numerical data are necessary for administration of any kind. In health, precise data on both mortality and morbidity have been more and more widely accepted as being the basis for any assessment of public health requirements and of the efficacy of action taken.

John Simon,[7] medical officer, first to the English Board of Health, which was created in 1855, later to the Local Government Board of 1871, was one of the first health administrators to stress the value to sanitary science and practice of the statistics issued by the General Register Office. Florence Nightingale,[8] more widely known for her work in nursing, was also a pioneer in the use of statistics, properly collected and interpreted, as a means of gauging health conditions in the army as well as in hospitals.

Later in the nineteenth century, Francis Galton played an important part in the movement which sought to apply mathematical procedures to biological phenomena. He founded the tradition of applying statistics to the study of human and biological problems, which in time led to the scientific epidemiological disciplines of to-day, and he was followed in this by Karl Pearson, Greenwood and Fisher in England and by Pearl in the United States of America. Another famous pioneer in the Americas in the use of quantitative methods in epidemiology was W. H. Frost. The experimental epidemiology undertaken by Greenwood and Topley in England, and by Webster in the United States of America, was a fascinating and instructive phase in this movement.[9]

The early work of the Health Organisation of the League of Nations in combating the entry into central and western Europe of the epidemics of typhus, relapsing fever and smallpox which raged in eastern Europe from 1921 to 1923 showed the urgent need for improving epidemiological intelligence and health statistical services in most European countries. An attempt was made to remedy this state of affairs from 1924 onwards, by exchange study tours, by expert studies of a series of problems concerning the international comparability of statistics (such as the definition of stillbirth, the selection of joint causes of death, and nomenclatures of causes of morbidity as distinct from those of mortality), and by the preparation of the fourth revision of the international lists of causes of death.

The international definition of stillbirth proposed in 1927 [10] was applied widely, but not universally in view of its legal implications. The comparative lists of causes of morbidity prepared by Roesle [11] stimulated the improvement of national morbidity statistics, but these were not then sufficiently developed for international comparability.

The League of Nations made other useful contributions in the field of medical and health statistics. It issued a series of handbooks giving statistical data, including medical and vital statistics, from a number of countries, and outlining the statistical organization of these countries. [12] The Health Organisation of the League also issued a long series of epidemiological and statistical tables and commentaries which appeared from 1922 onwards in its annual and monthly *Epidemiological Reports* and *Weekly Epidemiological Record*, and from 1925 onwards in the *Weekly Fasciculus* of its Eastern Bureau (Singapore). Statistical data on health conditions and activities in a number of countries were also published in the successive issues of the League's *International Health Year-Book*, and on population and vital statistics in its *Annual Epidemiological Reports*. A number of studies of epidemiological and statistical significance

[7] Simon, J. (1890) *English sanitary institutions*, Cassell, London

[8] Nightingale, F. (1858) *Notes on matters affecting the health, efficiency, and hospital administration of the British army*, Harrison, London

[9] Greenwood, M. (1932) *Epidemiology, historical and experimental*, Johns Hopkins Press, Baltimore

[10] League of Nations (1927) *Report of the Committee [of] Expert Statisticians on the definition of stillbirth*, Geneva (document C.H./Expert Stat./46)

[11] Roesle, E. (1928) *Essai d'une statistique comparative de la morbidité devant servir à établir les listes spéciales des causes de morbidité*, Geneva (League of Nations, document C. H. 730)

[12] League of Nations Health Organisation (1924-1930) *Statistical Handbooks Series*, Geneva, Nos. 1-14

appeared in the *Bulletin of the Health Organisation.*[13]

In the century which ended with the Second World War much progress was made in vital and health statistics by governmental services, intergovernmental institutions, and scientific societies, both national and international. Little by little the value of official mortality records, morbidity data collected by social insurance organizations, and hospital statistics as sources of information on the health of the population, and as a basis for planning health policies, began to be realized by an increasing number of health administrators and statesmen. By their efforts, health statistics improved in quality and increased in quantity until by the end of the Second World War they had grown to formidable proportions.

Progress had not been uniform, however. Mortality statistics recorded according to international rules of classification were available for highly developed countries, but for very few others, so that there were enormous gaps in the coverage of the world as a whole. Morbidity statistics were available for a large number of territories, but lacked uniformity and therefore comparability.

This was the situation when WHO took over the functions of the League of Nations Health Organisation. Subsequent sections will show what it has so far done in the field of international health statistics.

[13] Bibliography of the technical work of the Health Organisation of the League of Nations, 1920-1945. *Bull. Hlth Org. L.o.N.*, 1945, 11

MALARIA ERADICATION

More than seventy countries or territories are now committed to the eradication of malaria, but to ensure success in the battle against the disease further effort is needed.

To underline the need not only for continuing the battle, but for waging it even more intensively, WHO recently published a 12-page pamphlet entitled *Malaria Eradication : A Plea for Health.* In an introduction to this publication, Dr M. G. Candau, Director-General of WHO, speaks of the present " golden opportunity to free mankind of the world's most prevalent disease ", and goes on to mention the enthusiasm aroused by the idea of eradication among the governments of malaria-stricken countries, which " are committing over $325 million from their limited resources for expenditure on eradication schemes for the next five years ". Success or failure, however, depends on the support of " more privileged members of the world community . . . and on the timeliness of that support. Because of the steadily increasing resistance of malaria vectors to insecticides, the carrying out of the eradication programme has become extremely urgent. The choice lies between eradication within a certain period and no eradication at all."

The problem

The pamphlet opens with a survey of the economic and social repercussions of malaria —" the world's most expensive disease ". As recently as 1955, it was estimated that malaria affected 200 million people and caused 2 million deaths each year. More than 1100 million people are still exposed to the disease, and even in the areas from which it has been eradicated there is the ever present danger of its reintroduction. " In at least 120 countries and territories of the world, out of a total of some 200, malaria acts as a drag on economic development, although it is not yet possible to assess statistically the full economic effects in all the areas where the disease is rife."

Not the least serious effect of malaria on a national economy is the constant drain on resources represented by expenditure on medical care. In fact, " the total amount of this expenditure over a five-year period may

be as much as the estimated cost of malaria eradication, for which the capital outlay is limited to a period of about five years". The average costs of malaria control by residual spraying, per person protected, were recently estimated as follows:

Region	*Cost per person US$*
Africa	0.41
The Americas	0.455
South-East Asia	0.11
Europe	0.20
Eastern Mediterranean	0.20
Western Pacific	0.175

The cost of eradication would be 10% higher.

Losses in manpower are another serious consequence of malaria. Deaths occurring at 15 years of age, or under, may be considered to represent a net economic loss to society, and in many parts of the world mortality in infants and children, caused by malaria, is extremely high. In Africa, for instance, some 10-15% of children under 4 years of age die of the direct effects of the disease. Moreover, malaria increases the mortality from other diseases.

As regards loss of working time, "each infected adult suffers from at least one recurrence of malaria annually which incapacitates him for six days. Computation of the total number of malaria cases and the percentage of the economically active population shows that in 1955 the annual loss of working time due to the average six-day attack was some 130 million man-days in India, 4 million in Mexico and from 9 to 9.5 million in Thailand." In addition, malaria decreases working capacity throughout the year. In India, for example, assuming a 25% decrease in working capacity, the annual economic loss due to this factor is about $450 million.

The effect of malaria on land utilization is also great: "In the densely populated monsoon areas of Asia, in Central America and equatorial Africa, great tracts of fertile land lie uncultivated or abandoned because of malaria—and the situation thus created is aggravated by the growth of population and the increased pressure on land." During the past ten years, as a result of malaria control "large areas of unused, rich agricultural land have been brought under cultivation in Ceylon, India, Java, Mexico and elsewhere". Malaria also slows up engineering projects and industrial development generally, and adds to the costs of manufacture and mining in tropical and sub-tropical areas.

The apathy and lethargy caused by malaria are serious obstacles to the success of programmes of social improvement and agricultural development. Educational programmes also are hampered by the disease, since "to the child with malaria, improved schooling can bring little benefit".

Towards eradication

Methods of malaria control and eradication have been extensively reported in past numbers of the Chronicle.[1] For those unfamiliar with the subject, the pamphlet explains why malaria is now believed to be amenable to control and, indeed, complete eradication.

The present status of malaria eradication throughout the world is summed up as follows: "Nine countries or territories, once highly malarious, have reached the maintenance stage of their programme. Seven others are far advanced in their stage of attack. In forty-five an eradication programme is being implemented. Fourteen are about to plan or start field operations. About sixty countries or territories have yet to take the first steps towards malaria eradication."

Urgency and needs

With the development of resistance by mosquito vectors to commonly used insecticides in different areas, malaria eradication has become a race against time. In fact, there are indications that the insecticides now available may become ineffective within five to ten years. A programme of malaria eradication operations in many countries of the world for the period 1958-1962 has therefore been drawn up by WHO, in co-

[1] See in particular *Chron. Wld Hlth Org.*, 1955, **9**, No. 2-3. See also *Chron. Wld Hlth Org.*, 1954, **8**, 328; 1955, **9**, 253 1956, **10**, 69, 73, 354; 1957, **11**, 3; 1958, **12**, 366, 371; etc.

operation with the governments and the other international agencies concerned. If it is successfully completed, " malaria eradication will have reached an advanced stage in many of the stricken areas of the world and some 500 million people, hitherto at risk, may be free from the danger of the disease ".

The sum required for malaria eradication during the next five years is estimated at approximately $600 million. Of this, about 55% will be contributed by the governments of the malaria-stricken countries, and a further 35% is anticipated from such sources as the United States International Co-operation Administration (ICA), USA Loan Capital, and the United Nations Children's Fund (UNICEF). To provide the remaining 10%, WHO will have to raise approximately $50 million from voluntary contributions, as well as covering part of the sum through its regular budget and the Expanded Programme of Technical Assistance. As the organization responsible for the over-all planning of the world-wide programme, WHO " has furthermore to encourage research, provide advisers, consultants and other experts to governments, assist in national planning and in the training of local personnel and extend any further assistance that may be required in the organization and implementation of eradication projects ".

To enable the Organization to meet these responsibilities, the Eighth World Health Assembly established the Malaria Eradication Special Account (MESA) to be financed by voluntary contributions from governments and private sources. A similar fund—the Special Malaria Fund of the Pan American Health Organization (PAHO)—has been established to finance eradication programmes in the Region of the Americas.[2] Both funds are distinct from the regular WHO budget and the funds provided under the Expanded Programme of Technical Assistance. The estimated total expenditure for the operations planned to be financed from these funds for the period 1958-1962 is $48 512 835.

Contributions to the Malaria Eradication Special Account and the PAHO Special Malaria Fund can at present be raised only in the economically more developed countries. WHO therefore appeals urgently to these countries and their institutions to supplement the efforts of the less privileged countries to rid the world of malaria. In the words of the pamphlet: " The capital invested in eradication programmes will be regained in a few years. And once eradication is achieved, the world community as a whole, richer and poorer members, will benefit."

[1] See *Chron. Wld Hlth Org.*, 1958, **12**, 309.

THE PUBLIC HEALTH NURSE

Europe was the birthplace of what is known as " public " health, and it is in certain European countries that public health in terms of comprehensive health care as a government responsibility is most advanced. The pattern of health services varies considerably from one European country to another, and even within individual countries; but all countries have in common a need for frequent appraisal of existing services in the light of changing social and medical conditions, and for constant effort to improve and expand these services. International exchanges of knowledge and experience are particularly useful aids to national progress; it was to afford an opportunity for such an exchange that the WHO Regional Office for Europe, in collaboration with the Government of Finland, sponsored a two-week conference in August 1958 on one of the most important components of public health services—public health nursing.[1]

The State College of Nursing in Helsinki

[1] The conference report on which this account is based is available through the WHO Regional Office for Europe, 8 Scherfigsvej, Copenhagen, Denmark.

played host to conference participants from 26 countries. The conference was preceded by a year's preparation which included preliminary national meetings in 23 of the countries represented. Discussions at the national level were based on a guide distributed by WHO, and proved extremely useful on two counts: they not only supplied current information on the national situation, but also provided a stimulus for the assessment of public health nursing needs and services and a basis for plans for future development.

Meeting community health needs

The conference dealt with public health nursing as part of the total effort to meet community health needs. Professor Fraser Brockington, Director of the Department of Social and Preventive Medicine at the University of Manchester, England, set the scene in a brief sketch of the history of public health in Europe. He attributed the comparatively late development of public health to five major factors: lack of scientific knowledge; failure of the authorities to recognize their obligation to apply available knowledge for the protection of the public; absence of what may be called " social conscience ", which makes health for *all*, not just for certain privileged groups, the objective; weakness of the " value system ", which does not accord health its proper importance; and, finally, lack of organization, of responsible people, and of trained staff. Professor Brockington said: " Public health, as a form of treatment for ills of human society and as a means to promote community health, is a recipe consisting of many ingredients in the compounding of which human societies have exhibited their own individual characteristics. Some have made a better prescription than others, but none until recent times are even approaching completeness." He described the role of the public health nurse in different types of service; and he called attention to the necessity for public health to " change and adapt itself to the circumstances in which it finds itself ".

Despite a considerable diversity in conditions affecting health care among the countries of Europe, certain general and almost universal trends are discernible, including: an ageing population, with a consequent increase in chronic illness; an increase in mental illness, partly a product of the tensions and tempo of today; greater density and higher speeds of motor traffic, calling for emphasis on accident prevention; an increase in the influence of mass communications, which can be an important factor in health education; and such sociological trends as increased industrialization and the greater emancipation of women, which have profound effects on family and community life. All of these must be taken into account in assessing health needs and planning programmes to meet them. Further, medical and social progress must be considered, as Miss Elizabeth Hilborn, WHO Consultant in Public Health Nursing, emphasized: " Medical and social sciences have developed far beyond the community's present ability to apply them. Knowledge of growth and development processes and of the emotional and social factors in health have pointed up the need for considering emotional as well as physical causes of illness, for programmes which will control fear and insecurity as well as disease-causing bacteria, and for supportive and counselling services which will assist people in finding solutions for their own problems. Each day brings new scientific knowledge which makes eradication of certain diseases a practical possibility, and which points the way to the prevention or control of other illnesses which were once felt to be hopeless."

In some countries, environmental sanitation, communicable diseases, and infant and maternal mortality still demand priority in health programmes. In other countries, these basic problems have been met well enough so that attention can be turned to such matters as: the prevention and treatment of mental disease; the prevention and early treatment of cancer; the control of chronic diseases; occupational health services; accident prevention; the problems of ageing; physical, psychological and social

rehabilitation; expanded health education; radiation hazards, etc. The assignment of priorities depends on the urgency of the respective needs, the level of public education and readiness of the people for action, and the financial and personnel resources available. Frequent assessment of the situation is essential in order to keep pace with changing conditions and medical and social advances.

Planning services to meet health needs requires, first and foremost, co-ordinated leadership, preferably by a government authority. Decentralization is also desirable, however; planning must be undertaken at the local level by people familiar with the local situation and able to assume the requisite responsibility. The key members of the health team—usually the physician, the public health nurse, and the sanitary engineer—should all have a part in administrative planning.

Certain developments—some of them admittedly more of an ideal than a reality in a number of countries—will doubtless affect health programmes in the future, if not immediately:

(1) the development of medicine as a social science in which the physician accepts responsibility for promoting the health of the family rather than caring for sick people for a fee, and in which the hospital becomes a starting point for public health work in education, after-care, and social adjustment;

(2) the joining of preventive and curative services, of the forces of public health with those of the general practitioner and the hospital;

(3) an increased emphasis on individualized services in preference to mass control activities, and on group activity as a means of aiding the individual;

(4) the elimination of specialized activities in favour of more generalized services, which are often less costly in time and personnel and more satisfactory to the people served;

(5) the recognition of health education as a fundamental part of every health activity; and

(6) the participation of the public in health activities.

The role of public health nursing

With the trend towards integrated health services, the distinction between the hospital nurse and the public health nurse is becoming less marked; the differences in their functions are largely those of emphasis, with the hospital nurse giving more attention to care of the sick, and the public health nurse concentrating on promotion of health, prevention of disease, and rehabilitation.

The public health nurse's first duty is to provide comprehensive nursing services to individuals, families, and groups, usually as an agent of an organized community nursing service. She gives direct home care to the sick, teaches and supervises an auxiliary worker or a family member who will give such care, or refers the family to another source of nursing service. She sees to it that patient-care is continued to the point of best possible recovery, a task which often embraces the process of rehabilitation. She takes an active part in immunizations, health inspections, the collection of specimens for laboratory examinations, and the performance of an increasing number of diagnostic tests. Most important, she acts as a family health counsellor, mobilizing the necessary community resources to serve the needs of the family, and strengthens the relationship between the family and the general medical practitioner. The public health nurse, because of her closeness to people at critical moments—birth, death, sickness—is in a unique position to win the family's confidence and to teach its members how to cope with their health problems. Her teaching function goes beyond giving advice to individuals and families, however: she may be called upon to lead or to instruct formal or informal groups in discussions relative to health. In all her work, the public health nurse encounters social as well as medical problems, and she must be well enough informed concerning social resources to refer families in need of assistance to the proper agencies or offices.

Because of her close contact with the inhabitants of a community, the public health nurse is able to make a valuable

contribution to the planning of health activities and services. She is effective as a fact-finder in epidemiological investigations and other field studies, as a " two-way public relations " agent, and as an interpreter and " enforcer " of health laws and regulations. She often must serve in a managerial, supervisory or administrative capacity.

Functions such as the above require of the public health nurse certain personal qualities which are difficult to define. Although she usually has to work within the framework of regulations—which tends to imply rigidity—she must exhibit great flexibility in the performance of her many and varied tasks.

There was general agreement among the participants in the conference that public health nursing is most effective in the form of a polyvalent service concentrating on the family rather than the individual and providing both curative and preventive care. A proper balance between the two types of care is more easily achieved if auxiliary nursing personnel can be used as members of the polyvalent nursing team. Nurses trained for specialized services may serve as consultants to their " general practice " colleagues. Such consultation, plus good supervision, can do much to ensure high professional competence in a general nursing programme.

Since the nurse must co-operate with the physician, the social worker and the family, the role of each should be clearly defined and should be understood and respected by the others. The public health nurse should be regarded as a collaborator rather than a subordinate of the physician, whose functions she complements. It is important that general medical practitioners should participate more actively in public health work, and the public health nurse can facilitate this by making personal contacts with physicians in her area or with the local medical association.

The role of the hospital is changing: its services are becoming more comprehensive, and its relationships with outside health agencies are being strengthened. The goal is continuity in the care of the individual patient, carried through from the hospital to the home and achieved by co-operation between the hospital and the public health service.

The conference dealt at considerable length with the administration of public health nursing services. The importance of efficient administration is enhanced by the shortage of personnel, the needs of expanding programmes, and the increased demands made on nurses. Nurses with administrative ability must be used to the best possible advantage; good supervisors must be found; and auxiliary personnel must be trained in order to extend the services of the professional nurse.

An administrative problem of particular concern is that of providing public health nursing services for widely scattered, rural populations. Special inducements to " lure " nurses to rural posts may be required, such as salary differentials, or provision of housing; or it may be necessary to make service in a rural area for a limited time a prerequisite for practice in other localities.

In rural areas, public health services should be decentralized as much as possible in order to be in close contact with the people served, whereas hospital services should be centralized because of the difficulties of adequately staffing and equipping a number of small establishments.

Education for public health nursing

Whether public health nurses in a particular country can best be trained by a basic or post-basic programme depends upon the quality and potentialities of the basic training school, the stage of development of public health nursing services in the country, and the responsibilities which the public health nurse is expected to assume at the outset of her career. In any training programme, planned and supervised field experience is most important; but throughout the practical part of her training, the student nurse must be permitted to retain her student status. Advanced education is necessary for those who are to occupy administrative, supervisory, consultative, or teaching positions.

As indicated above, consideration should be given to the training of auxiliary personnel

as a means of extending the services of professional public health nurses. There is a need to define those activities and responsibilities which might be delegated to a less well prepared group of workers. The training of auxiliaries would then be based on where and how they were to function, and its length would depend on the number and complexity of the tasks assigned to them.

Evaluation in public health nursing

Both programme and performance must be subjected to constant appraisal if public health nursing services are to be improved.

The first step in any formal evaluation of a programme is to define the objectives of that programme. The information necessary to determine how well the existing services are meeting the defined objectives should then be collected. The findings will indicate changes that need to be made.

Evaluation of the performance of the individual nurse serves two purposes: it provides an objective basis for administrative action such as promotion, transfer, dismissal, selection for additional training, etc.; and it aids in the education and development of the nurse herself. Such an evaluation is essentially part of the supervisory process, in which the nurse and her supervisor exchange experience, analyse their tasks and plan together for the improvement of the service.

The participants in the conference agreed that a public health nursing service will grow in effectiveness to the extent that its members are able to appraise their programmes and their own work critically and to change as change is indicated.

HEALTH CONDITIONS IN THE AMERICAS

The population of the Americas is increasing rapidly, and, characteristically, nearly all countries and areas have a young population; in many of them over 40% of the inhabitants are under 15 years of age. Several different patterns are discernible in the principal causes of death recorded during the years 1953-1956. In the United States, Canada, Argentina and Uruguay, and also in Hawaii and Jamaica, the two leading causes of death were diseases of the heart and malignant neoplasms, which are diseases of the older age-groups. In many other countries the leading causes, affecting mainly younger age-groups, were gastritis, enteritis, malaria, influenza, pneumonia, tuberculosis, and certain diseases of infancy; but their relative importance varied from country to country. In some countries, many deaths were caused by communicable diseases such as typhoid fever, syphilis, whooping cough and measles. Avitaminoses and other metabolic diseases and anaemias were also responsible for many deaths and relatively high death-rates in certain countries.

Many infant deaths are not recorded, and definitions of causes of death are often not comparable from country to country. Nevertheless, the available data show that infant death-rates are high in many areas. During 1956, for example, death-rates in the neonatal period varied from around 20 to 40 per 1000 live births, but in the post-neonatal period they varied from 5 to 83. This greater variation after the neonatal period is to be expected, for neonatal deaths are on the whole due to conditions present at birth and therefore largely unalterable, whereas post-neonatal deaths are due principally to environmental conditions and have been almost eliminated in some countries. There are wide variations in the death-rates recorded for infective and parasitic diseases, respiratory diseases, and digestive diseases; in many countries these are very high, indicating the need for improving environmental conditions.

The usual pattern of mortality among infants and children is of high rates in infancy, followed by lower rates in childhood, with

the lowest in the life-span found in the age-group 10–14 years. For the years 1953–1956, infective and parasitic diseases, respiratory diseases, and digestive diseases accounted for over two-thirds of deaths in early childhood (1–4 years) in countries with high death-rates in this age-group, but for less than a third in countries where the corresponding rates are low. In the countries with low death-rates, accidents claimed the largest toll of deaths, followed by influenza and pneumonia combined, then by congenital malformations and malignant neoplasms. In countries with high death-rates, on the other hand, gastritis, enteritis, etc. took first place, followed by influenza and pneumonia and other infective and parasitic diseases. Malaria was a principal cause in 5 countries and one other area. Avitaminoses and other metabolic diseases appeared also as a principal cause in 5 countries and 3 other areas, even though the certification of deficiency diseases is known to be incomplete.

In later childhood (5–14 years) accidents took first place as cause of death in 14 out of the 21 countries and other areas for which information was available. In many, however, communicable diseases such as malaria and tuberculosis, and gastritis, enteritis, etc. were principal causes of death.

Communicable diseases are prominent as causes of death at all ages. Although the incidence of diphtheria has continued to decline in several countries and other areas, in 1956 approximately 12 000 cases were reported, and in 8 countries and 2 other areas the rates were in excess of 10 per 100 000 population.

In one country and 4 other areas, the number of new cases of leprosy reported in 1956 exceeded 10 per 100 000 population. Although the number of reported cases has declined in some countries and areas, in a few there were more in the period 1953–1956 than there had been in the period 1950–1952, and it is expected that even more cases will be reported when diagnostic and treatment facilities are extended. The number of known cases of leprosy in the Americas exceeds 100 000, with cases in nearly all countries and other areas; but the actual number of cases is much larger, and may be twice as large.

There are marked variations in the numbers of cases of malaria reported, by year and by area. Nevertheless, nearly 600 000 new cases were reported in 1955. Malaria is therefore a major health problem, and an extensive malaria eradication programme is now under way in the hemisphere.[1]

Cases of plague were reported from only 6 countries in the Americas during the years 1953–1957; in 1957 there were in all 154 cases. Campaigns are in progress to eliminate vectors and reservoirs of the disease.

In Canada and the United States combined, the poliomyelitis case-rates were over 20 per 100 000 population in the years 1949, 1950 and 1952–1954. Vaccination programmes were started in these countries in 1955 and extended in 1956, and the case-rates per 100 000 fell to 8.6 in 1956 and 3.3 in 1957. In the rest of the Americas the rate was 1.5 per 100 000 in 1947, but steady increases in the number of reported cases in some countries and outbreaks of the disease in others resulted in case-rates of more than 4 per 100 000 for the years 1953–1956.

Practically all the cases of smallpox in the Americas during the period 1953–1957 were reported from 9 countries in South America. In 1950 the XIIIth Pan American Sanitary Conference had recommended a systematic vaccination programme aimed at the eventual eradication of the disease. Although great progress has been made, eradication has yet to be completed in 7 countries of South America, and 5604 cases were reported in 1957.

The number of cases of syphilis throughout the hemisphere (nearly a quarter of a million in 1956) is high enough to show that this remains a major health problem in spite of the successes attending its treatment. In many countries there has been a continuous decline in the case-rates, but in others there have been fluctuations from year to year, the result perhaps of variations in case-finding procedures.

The large number of cases of tuberculosis

[1] See *Chron. Wld Hlth Org.*, 1958, **12**, 309.

recorded between 1953 and 1956 indicates that cases were conscientiously diagnosed and reported to the health authorities; variations, and especially increases, in the numbers are probably a reflection of changes in case-finding activities. In several countries and other areas, including Canada, the United States, Venezuela and Puerto Rico, the consistent decline in the case-rates was probably due to a true reduction in the incidence of the disease.

Typhoid fever still presents a considerable problem, with some 40 000 cases annually in the period 1953–1956 and an incidence of over 50 per 100 000 population in Chile, Colombia, El Salvador, Peru, British Guiana, French Guiana, Antigua, Martinique and Dominica. Epidemic typhus, on the other hand, is declining, with only 746 cases in 1957, which is less than a third of the number reported in 1953.

Whooping cough is still a major cause of death in infancy in some countries, and the case-rates for the disease are still high in many areas. Judging by the number of reported cases (227 000 in 1956) and the death-rates, whooping cough presents a much greater problem than diphtheria.

In Haiti a yaws eradication programme is going on, and the number of reported cases fell from 82 735 in 1950 to 1074 in 1956. Elsewhere in the Americas, marked reductions have been noted. In 1956, approximately 14 million people in 8 countries and 9 other areas were affected with yaws.

Between 1953 and 1957 there were 271 fatal, 55 non-fatal and 3 unspecified cases of yellow fever reported, all as jungle yellow fever, except for 3 cases of urban yellow fever in Trinidad in 1954. In 1956 more than 2 000 000 vaccinations were reported. The eradication of *Aëdes aegyptii* is one of the four eradication programmes in progress.[2]

The incidence of disease is related to environmental sanitation, and a well-developed and co-ordinated programme of health improvement requires information on such matters as water-supplies and sewage disposal. Data are available in respect of the whole national territory for only 13 countries, in which the population served by a water-supply system varied from slightly over 10% to 75% during 1956. Over half the urban population was served by water-supply systems in 8 of the 11 countries for which the relevant data are available. In most countries, the population served in rural areas was either small or not known. Data regarding sewage disposal are far from complete, but in 1956 several countries and other areas had over half the population without sanitary facilities.

Health improvement also depends on whether medical and health personnel, health services and hospital facilities are available to a sufficient degree. As was to be expected, there are wide variations in the numbers of physicians available. In 1957, Argentina, Canada, Cuba, the United States and Uruguay each had 10 physicians or more per 10 000 population, but 12 countries had less than 3 per 10 000. In most countries, the number of dentists, veterinary surgeons, sanitary engineers, nurses and other auxiliary medical personnel was relatively small.

The general picture of health conditions in the Americas over the years 1953–1956 is one of progress in many fields, especially in the eradication and control of communicable diseases. But much remains to be done. Many infants and young children still die from preventable disease; environmental conditions and sanitation require special attention; more doctors, nurses and other health workers are needed in many countries. Nevertheless, comparison with the situation of a decade or two ago will show what immense strides have been made.

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A comprehensive report on health conditions in the Americas for the years 1953–1956 has been published by the Pan American Sanitary Bureau (PASB),[3] which serves as the WHO Regional Office for the Americas. This report was prepared for the XVth Pan American Sanitary Conference, and from it were drawn the details given above.

[2] See *Chron. Wld Hlth Org.*, 1958, 12, 377.

[3] Pan American Sanitary Bureau (1958) *Summary of four-year reports on health conditions in the Americas*, Washington, D.C.

COMMUNICABLE DISEASES IN AFRICA: SOME FACTS AND FIGURES

The control of the communicable diseases continues to be the most urgent task of the public health services in Africa. The article that follows is a summary of recent reports from the WHO Regional Office for Africa on progress in the control of brucellosis, leprosy, tuberculosis and yaws.

Brucellosis

For several years, WHO, FAO and the Commission for Technical Co-operation in Africa (CCTA) have been greatly concerned about the ravages of brucellosis in cattle in Africa, and the possible repercussions on human health. In June 1958, a seminar on brucellosis was held by these three organizations at Elisabethville, Belgian Congo. It was attended by about 30 specialists from 12 countries and territories, who discussed the various aspects of the disease, including identification, epidemiology and measures for its control. The following facts and figures emerged in the course of the seminar.

In many parts of the African continent, the problem of brucellosis is closely linked with that of nomadic cattle. In southern Angola, for example, herds in search of water and good pastures cover enormous distances during the dry season, when outbreaks of epizootic abortion due to brucellosis are most liable to occur. A mobile brigade of inspection had therefore been set up by the veterinary services to keep a watch on the situation.

About 17% of the 12 000 to 13 000 dairy cattle in the south of the Belgian Congo are infected, and cases of brucellosis have been found among Africans in the cattle-raising areas. Veterinarians are working on the problem in close contact with physicians, and many of the cattle have been inoculated against the disease.

Some 200 cases of human brucellosis are diagnosed in Kenya every year, as compared with between 20 and 30 cases in Uganda and Tanganyika. No cases occur in Zanzibar. In Uganda, up to 15% of the milk yield of cows and goats is infected.

In French Equatorial Africa, where the disease exists among nomadic cattle in the Lake Chad area, epizootic abortion is rare. A few cases of brucellosis are found among people living in close contact with the herds.

Brucellosis control started in Mozambique in 1953, and about 150 000 doses of vaccine have been distributed there to date. A mobile unit has counted up to 200 000 infected cows, representing about 7% of the total number of cattle. In Nigeria, the problem is complicated by the fact that large numbers of the population live in close contact with livestock; a special effort is being made to deal with it by inoculation of calves and pasteurization of milk.

In British Somaliland, a very large proportion (about one-third) of patients in hospital are infected with brucellosis. Men and animals live in close contact in this territory, where goats are often kept in family dwellings.

No case of human brucellosis has been reported in Southern Rhodesia for many years, and the infection rate among cattle raised by Europeans does not exceed 10%. Widespread inoculation of cattle is carried out.

In the Union of South Africa, inoculation is also widespread and 80% of the dairy cattle in the Johannesburg area are protected by compulsory vaccination. Vaccine produced in Onderstepoort is exported to other African countries and territories.

Finally, there are occasional cases of human brucellosis in northern Bechuanaland.

Leprosy

Some 2 300 000 cases of leprosy—or about a quarter of the world-wide total—are to be found in Africa south of the Sahara. Half of these cases are already being treated with sulfones, and it is expected that treatment will be extended to all leprosy cases in the Region within the next few years. The percentage of " neutralized " patients—i.e., those who have been rendered non-contagious —is already very high and, although the treatment takes some time, the risks of reinfection are relatively low. It is therefore reasonable to hope that the present generation of Africans will be the last to suffer from the disease to any large extent.

Mass antileprosy campaigns in French Equatorial Africa started in 1953, and have been assisted by WHO and UNICEF since January 1956. The weekly or fortnightly administration of sulfones, either orally or by injections, is carried out by mobile units. Those who cannot be reached by the units are treated in fixed centres or leprosy villages. Of the 145 000 cases recorded in the area up to July 1958, 91 700 are receiving regular treatment; more than 20 300 cases are now considered as neutralized. As the lepromatous form of the disease—the most malignant—is rare in French Equatorial Africa, where it affects only 7% of patients, the outlook for the eradication of leprosy from the area is most promising.

The campaign in French Equatorial Africa has served as a pattern for activities in French West Africa, where some 290 mobile units have been formed for the detection and treatment of leprosy. About 300 000 cases, out of a probable total of 400 000, had been recorded by September 1957. Early in 1958 UNICEF donated 46 million sulfone tablets and supplied 90 motor vehicles and 200 bicycles for use in the campaign.

Case-finding surveys in the French Cameroons have revealed some 26 600 cases of leprosy, of which 18 000 have been or are being treated, 13 700 of them regularly. The total number of cases is estimated at 50 000. Of the 36 motorized treatment units which have been set up, 19 are equipped by UNICEF.

The leprosy control campaign in Gambia started in August 1957. The total number of cases is estimated at 10 000, of which a quarter were under treatment in June 1958. The small area of the territory permits treatment to be carried out in existing fixed health centres.

In Ghana, 36 000 cases of leprosy were treated and 300 neutralized between March and December 1957. Fixed treatment centres are supplemented by 12 mobile teams, 9 of which have been equipped with Landrovers by UNICEF.

Nigeria was the first African country to use sulfones in the treatment of leprosy. When the antileprosy campaign began in 1951, the number of leprosy cases in the country was estimated at 500 000, but recent surveys indicate that 700 000 would be nearer the mark. WHO and UNICEF assistance to the campaign started in 1954, and about 219 000 cases had been treated by the end of 1957. Treatment is given mostly in fixed centres, to some of which mobile teams are attached, and in leprosy villages.

Sulfones have also been widely used in the treatment of leprosy in the Belgian Congo, Spanish Guinea, and the Union of South Africa, for several years. In Uganda, a campaign to set up leprosy villages near dispensaries or hospitals began in 1957, while an antileprosy campaign is to be started in Sierra Leone this year.

UNICEF has already promised more than $2½ million in material assistance to antileprosy campaigns in Africa for the period 1958–1960. WHO will continue to give technical advice and supply consultants for these campaigns, as well as granting fellowships to antileprosy workers from the African Region.

Tuberculosis

Tuberculosis surveys undertaken by WHO teams in Africa during the past few years have thrown new light on the prevalence of the disease in various parts of the continent.[1] In some countries, e.g., Nigeria, the situation does not seem to be so serious as

[1] See also *Chron. Wld Hlth Org.*, 1958, **12**, 353.

had been feared. Elsewhere, however, the disease has been found to be more widespread than was formerly thought, e.g., in British Somaliland, where more than 2% of the adult population are believed to be affected. By 30 June 1958, over 50 000 persons in the African Region had been examined by WHO tuberculosis teams.

It is estimated that, in Basutoland, about 3000 persons out of a total population of 600 000 are suffering from infectious tuberculosis. A mass control campaign is being planned in a pilot area containing 20 000 inhabitants; it will be extended as soon as the form of treatment most suited to the territory has been ascertained.

In Bechuanaland, about 3000 persons—i.e., 1% of the population—are infectious cases. Treatment and vaccination are serious problems in this territory, since a large part of the population is semi-nomadic.

In Kenya, a mass survey and treatment campaign covering between 120 000 and 140 000 people started in Nairobi in January 1959. This is the largest antituberculosis campaign to be undertaken in the African Region so far.

The rate of positive reactions to tuberculin tests in Mauritius exceeds 50% in certain groups. Here, as elsewhere in Africa, the incidence of the disease is higher in urban than in rural areas. The mortality rate for pulmonary tuberculosis, which had started to decline in 1952–1953 when isoniazide treatment began, became stable in 1955–1956, and was slightly on the increase in 1957. Between July 1951 and December 1957, over 70 000 children and young people were vaccinated by the island's tuberculosis control services.

The prevalence of tuberculosis in St Helena is very low, and it should be possible to eradicate the disease from the island completely by means of mass BCG vaccination combined with domiciliary treatment of all infectious and potential cases.

Surveys in Swaziland have indicated the presence of 2400 infectious cases, i.e., a prevalence rate of 1%. As it would be impossible to treat all cases in hospital, they will receive domiciliary drug treatment regularly for a year; follow-up care will be given by health visitors.

Yaws

During the past few years, over 18 million people have been examined in yaws control campaigns in Africa south of the Sahara, and 9 million have received treatment. The campaigns have been assisted and co-ordinated by WHO and UNICEF.

In French West Africa, 5 territories are covered by yaws control campaigns. Between October 1956 and September 1958, over 2 070 000 people were examined, of whom about 1 858 000 were treated. In many areas 80% of the population have come forward for examination and treatment, with excellent results. In some places the percentage of active cases has fallen from 13 to 0.012.

Campaigns in Ghana started in 1955, and by the end of June 1948 almost 2 816 900 people had been examined and 1 231 000 treated. The initial treatment survey has been completed in the northern part of the country, and is continuing elsewhere. By 30 September 1958, over 400 000 people had been examined in resurveys.

An initial treatment survey of Liberia was completed by the end of October 1957. More than 769 300 people were examined, and about 146 900, or 19%, were found to be suffering from yaws. Resurveys covering the whole population were carried out between July 1957 and October 1958; of the 831 150 people examined, less than 4% were affected by the disease, and in many districts the prevalence was much lower. Possibilities of reinfection are being closely watched, and it is hoped that Liberia will be completely free from yaws in the not too distant future.

With assistance from WHO and UNICEF, the Government of Nigeria started a mass yaws control campaign in 1954.[2] To date some 12 million people have been examined and 5 million have received treatment. As in campaigns in other parts of Africa, a single dose of penicillin (from 2 to 4 ml according to age) is administered to patients, and half

[2] For details on the organization of the campaign in western Nigeria, see page 96. See also *Chron. Wld Hlth Org.*, 1957, 11, 309 for a general account of the campaign in its earlier stages.

that dose to latent cases and contacts. On an average about 100 000 injections are given monthly. About 500 people, including 5 doctors, are fully employed in the campaign.

In Sierra Leone, the average yaws infection rate varies between 7% and 8%. By 31 July 1958, almost 597 900 people had been examined, and 78 000 cases of yaws had been found and treated. During resurveys, 170 100 people were examined, among whom 9100 cases were reported.

The campaign against yaws in French Togoland is drawing to a close. The second resurvey is now under way and there will be a third, and final, one. Over 30 000 people were examined in September 1958 alone.

Mass control campaigns are shortly to be launched in the various territories of French Equatorial Africa, where it is expected that some 340 000 cases will be treated.

If the present rate of progress can be maintained, yaws should cease to be a major health problem in the Region within the next few years. Vigilance will not be relaxed, however, since it is planned to continue yaws control in the form of surveillance and preventive work by the general public health services.

A NEW LIGHT ON PSITTACOSIS

Psittacosis can by no stretch of the imagination be said to rank as a great epidemic scourge. The reported outbreaks of this respiratory virus disease, though dramatic enough in their lethality, have not been sufficiently extensive to give it prominence as a public health problem. Nevertheless, to the people stricken, the physicians concerned with treatment, the diagnostic and public health laboratories, and the health authorities responsible for tracing the source and checking the spread of an outbreak, it is a disease that causes no little concern. And there is now reason to believe that it is considerably more widespread than was once supposed and will call for more complicated control measures in the future.

It was at one time generally thought that psittacosis was, as its name would suggest, contracted by man only through contact with infected parrots, parakeets and other psittacine birds. Today, however, as a result of improved serodiagnostic techniques it is known that many non-psittacine birds—turkeys, ducks, chickens, pigeons, and even gulls and sparrows—are also naturally susceptible to infection with the psittacosis virus and capable of passing it on to any human being with whom they come into contact. The fresh light that this discovery has shed on psittacosis—and on ornithosis, the name given to its counterpart in non-psittacine birds—is reviewed in a recent article by Dr K. F. Meyer of the George Williams Hooper Foundation, University of California, San Francisco, Calif., USA.[1]

Dr Meyer points out that just under half of the 98 species of birds which have so far been found to harbour the psittacosis virus are non-psittacine. The vast reservoir of natural infection represented by poultry and pigeons greatly increases the chances of spread of the disease. The risk of infection, once believed to be confined to people associated in some way with rare or pet psittacine birds, is now known to extend to many other people: pigeon fanciers, poultry farmers, employees at poultry-processing plants, home processors of poultry, and so on. Furthermore, since the infection can be transmitted indirectly, through droppings and feathers, even free-flying birds such as wild pigeons and gulls must be considered a potential danger.

The unspectacular frequency of psittacosis recorded in the past was probably partly due to the difficulty of diagnosis. If there

[1] Meyer, K. F. (1959) Some general remarks and new observations on psittacosis and ornithosis. *Bull. Wld Hlth Org.*, **20**, 101

was no clear evidence of the patient's association with some psittacine bird or with some person known to be infected, a case of psittacosis was quite likely to be reported merely as a respiratory infection of unknown origin. The improvement of serological techniques in recent years has immensely simplified the diagnosis of the disease, both in humans and in birds. While admitting the value of serological tests, Dr Meyer stresses, however, that isolation of the virus from the suspect bird or patient will remain the ultimate diagnostic criterion.

The ability of birds to resist infection varies: some can withstand massive injections of virus, readily destroy it and never become carriers; others may succumb to small doses or recover but continue to harbour the virus in their organs for many months. Dr Meyer suggests that, since resistance is determined by constitutional factors, "it should be possible through selective breeding to develop strains of birds that will not acquire a non-sterile immunity, so eminent a source of persistent infection in aviaries and poultry flocks". The possibility of inducing immunity in flocks by vaccination with inactivated virus suspensions is being investigated. The results of preliminary trials have been reasonably encouraging, but it remains to be seen whether large-scale immunization would be practicable.

The advent of the broad-spectrum antibiotics has robbed human psittacosis of much of its lethal power. Prompt administration of large doses (2 g daily) of one of the tetracycline compounds will often bring about an immediate clinical improvement, and prolonged treatment will usually prevent relapse, formerly an all too common feature of the disease. These compounds are effective, too, in suppressing active infection in birds and even in some cases in ridding them of the virus completely. Addition of tetracycline compounds to the feed, under carefully controlled conditions, has led to the eradication of carriers from a few parakeet aviaries and would seem to indicate a promising line of approach to the control of infection in poultry farms. But the results of studies carried out on pigeons and turkeys have so far been disappointing. The large quantities of antibiotic (about 100 mg per kg of bodyweight) required to guarantee an adequate concentration in the blood of turkeys would make the method prohibitively expensive and, moreover, even with such doses there would be no certainty that all the birds would be freed of infection, since the food intake of sick turkeys is poor and erratic. At the moment, therefore, the prospects for the chemoprophylaxis of ornithosis are not bright: continuous feeding of antibiotics in low dosage might prevent clinical attacks caused by a virus of low virulence, but would probably prove ineffective against highly virulent strains and might, moreover, encourage the development of drug-resistant strains. Still, as Dr Meyer says, there is yet hope that some effective means of applying antibiotic therapy will be devised.

The control of psittacosis is manifestly no mere matter of preventing the movement of infected birds from one country to another. In every country there is a potential reservoir of infection in the native bird population. The problem to be solved is twofold: how to stop outbreaks among birds from spreading, either to other birds or to man; and how to eliminate the latent infection in the bird population. In the case of free-flying birds, it is a virtually insoluble problem. In the case of poultry, however, although the mode of spread is not yet fully understood, there are a number of measures that can be taken. In describing these measures, Dr Meyer emphasizes the importance of the early isolation of sick birds as a means of checking the spread of disease through a flock. Only too often the infection goes unnoticed until the birds reach the processing plant, with the result that employees at such plants are frequently in danger of contracting the disease. Here Dr Meyer adds a word of warning. The very understandable and growing tendency on the part of plant operators to refuse to handle suspect flocks may lead unscrupulous poultry raisers to sell their birds through other channels rather than lose money on them, and this may bring under risk of infection all those who prepare birds for the table in their own

homes. He feels, therefore, that the health of home processors should be watched carefully, especially after it is known that a local processing plant has rejected a flock.

Mass vaccination and administration of antibiotics may both prove useful weapons in the fight against psittacosis. But the final answer to the control problem will only come through the earnest co-operation and vigilance of pet-bird traders, poultry farmers, processors and distributors, pigeon fanciers and loft operators, agricultural agencies, general practitioners and veterinarians, and public health authorities. If these diverse groups of people are all constantly on the alert for signs of the infection, it should be possible, through timely intervention, to stop outbreaks of the disease among birds both from endangering the health of the public and from bringing economic disaster in their train.

Reports of Expert Groups

ATARACTIC AND HALLUCINOGENIC DRUGS IN PSYCHIATRY

There has been a notable growth of interest in recent years in the effect of drugs on mental function in man. This has been due in large measure to the discovery of the marked mental disturbances of an hallucinatory character caused by lysergic acid diethylamide (LSD_{25}), and to the emergence of the so-called tranquillizing drugs from the antihistamine compounds and the Rauwolfia alkaloids. A Study Group on Ataractic and Hallucinogenic Drugs in Psychiatry was convened by WHO, in November 1957, to examine some aspects of the problems raised by these psychotropic drugs, which are used not only in mental hospitals throughout the world but also to an increasing degree in general practice and in the community as a whole; and to suggest the most fruitful lines of enquiry into a subject which is as yet only very imperfectly understood. The Group had before it a large number of papers contributed by its members, on such diverse topics as the properties of psychotropic drugs, the relations of drug-induced mental changes to psychoanalytic theory, and the role of psychotropic drugs in group therapy.[1] Its report was partly based on these, and on the paper entitled " Psychotropic drugs: observations on current views and future problems ", by Dr J. Elkes, Professor of Experimental Psychiatry at the University of Birmingham, England, who was present as a consultant at the Group's meetings.

The report giving the Study Group's conclusions [2] outlines the reasons for the present lack of knowledge about these drugs, some of which have long been employed in religious and ceremonial customs in some parts of the world. One of these reasons is the essentially personal and subjective nature of some of their effects. This is a field of enquiry far removed from that of the objective and measurable phenomena which nineteenth century science on the whole regarded as solely worthy of consideration. In this respect it is akin to the field of psychoanalysis, which was at first greeted with silence, doubt, and disapproval. Another reason for neglect of these drugs is the uneven development of animal behavioural sciences, in which investigation concentrated on the cognitive rather than on the affective aspect of the animal. Yet another lies in the uneven development of the basic neurological sciences, for it is only in the past two decades that electron microscopy and X-ray diffraction have provided knowledge of the submicroscopic structure of the functional units of the nervous system and microchemical analysis has shown

[1] Some of these papers will be published later in the *Bulletin of the World Health Organization.*

[2] WHO Study Group on Ataractic and Hallucinogenic Drugs in Psychiatry (1958) *Report* (*Wld Hlth Org. techn. Rep. Ser.*, No. 152), 72 pages. Price: 3/6, $0.60, Sw. fr. 2.—.

the chemical differences between various areas of the brain. Knowledge such as this is a prerequisite to the understanding of the chemical targets of the ataractic and hallucinogenic drugs. Only very recently, too, has an attempt been made to bring together neurophysiological experiment and information theory, which was originally developed to meet the needs of research into weapons but has an obvious bearing upon the functioning of the nervous system.

The report examines the part played in behaviour by the hypothalamus, the ascending reticular system and the limbic system, cerebral subcortical centres now known to control patterns of emotional expression, and the effect on them of the psychotropic drugs; and proposes a very provisional classification of these drugs, in the light of their effects, into major tranquillizers, minor tranquillizers, hypnosedatives and tranquillosedatives, anti-acetylcholine drugs with marked psychotropic effects, stimulants, and hallucinogenic agents. The classification is necessarily provisional because of the extremely wide range of action of these hallucinogenic drugs, and because it is based on experimental laboratory data which at this stage can only be tenuously related to clinical effects. The relation of drug-induced mental changes to psychoanalytic theory is then discussed, and the value of the drugs in psychotherapy.

The psychotropic drugs have altered the management and treatment of certain types of psychotic patients in mental hospitals, enabled many chronic patients to leave the hospitals and receive treatment as outpatients, and in individual cases made rehabilitation a possibility. The report notes, however, that the choice of drugs in treatment has been essentially empirical, and that no clear and detailed criteria have guided the investigators in their trials. Nevertheless, the management of overtly disturbed patients has been greatly simplified, and this, the Group thinks, might well mean that the patients in such cases are, perhaps for the first time, accessible to individual and group influences from which a defensive pathological process has hitherto shielded them. The report suggests that this offers totally unexplored opportunities in both individual and group psychotherapy, and discusses the fresh outlook and skills required of investigators into this new situation, the need for more investigators, not only inside but also outside the ranks of medical men, the effect on the functional pattern and even the layout of the mental hospital, and the problems posed by the use of these drugs in different cultural settings. Mental illness in a country like Nigeria, for example, does not follow quite the same patterns as in Europe or America; moreover, the use of psychotropic drugs in the less developed countries seems to be distinguished from their use in the more developed by the unusually low incidence of toxic manifestations among patients being treated.

There are great difficulties in developing methods for the investigation of the effects of psychotropic drugs. Among these difficulties are individual variations in reaction, the so-called " placebo response ", the absence of uniform terms to describe the phenomena observed (so that ambiguity is the rule), and the assessment of the non-verbal element present in the clinical state under observation. The report discusses these difficulties, and ways to overcome them. The selection of observers, in the Group's opinion, lies at the very core of any trial of a drug, and it should be carried out with meticulous care. The design of the trial should itself fulfil certain requirements.

The report then examines the public health aspects of the use of psychotropic drugs. With regard to the question whether they have led to a reduction in the numbers of patients in mental hospitals, it discusses the multiplicity of factors which can produce change in the numbers, concludes that the answer is as yet unknown, and stresses the need for controlled studies to assess the therapeutic efficacy of the drugs. The necessary data to form a judgement can be obtained only by epidemiological, sociological and social-psychological studies, the technique of which is as yet at an early stage of development. Similar studies should also be made of out-patient psychiatric

clinics and of general practice, for the mentally ill in hospital form only a part of the mentally ill population of a country. Because of their relatively short history, the report notes, it is difficult to predict whether the psychotropic drugs will continue to be widely used, and, if so, what effect they will have on the health of the community. The public health authorities should, however, be aware of their potential hazards, and take steps to obtain the necessary knowledge about these drugs and their use by the studies suggested, which should be carried out over a sufficiently long period and in a variety of settings.

NUCLEAR ENERGY, MEDICAL TRAINING AND PUBLIC HEALTH *

Nuclear energy and medical studies

The use of the Geiger-Müller counter, the determination of the half-life of an isotope, the use of isotopes in specific tracer experiments on animals, and the damage to chromosomes caused by ionizing radiations are a few of the many subjects with which the medical student will have to be familiar in future. Such knowledge cannot be acquired by the mere reading of popular works, however good these may be. Nor will the student be satisfied with occasional references by his teachers to the " potentially pathogenic effects of ionizing radiations ". What he will obviously need, above all, is a sound knowledge of nuclear physics. One of the first practical conclusions to be drawn, therefore, is that in many countries a much more thorough training in mathematics will have to be provided. Secondly, in physics as taught during the first years of medical studies, equal emphasis has hitherto been laid on all the classic branches such as mechanics, the properties of matter, heat, sound, light, electricity and magnetism. From now on, there should be a change in the emphasis placed on these subjects, and particular attention should be paid to the study of electrical and nuclear phenomena in their many forms.

The organization of theoretical courses in these subjects should not in general raise any particular problem. On the other hand, the organization of practical experiments and demonstrations in nuclear physics (without which the students might become discouraged) calls for a new approach. " In the past, a regrettable isolation has often separated the students in the medical faculty from their contemporaries in the other scientific departments of the university, and this has sometimes had the unfortunate result that senior men engaged in research and teaching in the more advanced fields of physics and chemistry have undesirably underrated the abilities of medical students in general and have relegated their tuition to junior colleagues. That a relationship between teacher and taught which originates in this way should frequently engender an undesirable atmosphere—especially among young and impressionable students during their first experience of university life—is quite understandable, and there are grounds for believing that a certain lack of sympathy towards the basic sciences which can often be encountered in older medical practitioners represents the latent reciprocation of this early uncongenial association. Today, fortunately, a larger number of the senior teachers of physics and chemistry at universities—perhaps through a greater sense of social responsibility—are prepared to co-operate more cordially with their colleagues in medical schools, and in most instances where this more liberal attitude has appeared, those responsible for the education of medical students have responded cordially to the opportunity. For it is only through the kind collaboration of those in charge of larger physics laboratories that such apparatus as

* WHO Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (1958) *Fourth report : post-graduate training in the public health aspects of nuclear energy* (*Wld Hlth Org. techn. Rep. Ser.*, No. 154), 53 pages (price: 3/6, $0.60, Sw. fr. 2.—); *Fifth report : introduction of radiation medicine into the undergraduate medical curriculum* (*Wld Hlth Org. techn. Rep. Ser.*, No. 155), 24 pages (price: 1/9, $0.30, Sw. fr. 1.—). Also published in French and Spanish.

that effecting particle acceleration, isotope preparation and micro-wave emission can be seen in operation." In fact, the days are over when the necessary equipment for the teaching of medical physics was at the disposal of any school of medicine.

If instruction in nuclear physics is to be effective, study courses must provide also for revision and amplification of the basic knowledge already acquired, and ensure that the student has a clear idea of the biophysical properties of radiations. In the study of ionizing radiations—which are by far the most important in pathology—special attention should be paid to the ionization density they produce along their paths, and the depth to which they penetrate various kinds of tissues. In this connexion, the study of alpha and beta rays is of particular importance, since it is to these that living tissues are most likely to be exposed at the present time. Nevertheless, since proton and neutron radiations may also shortly come into more general therapeutic use, these too must be dealt with.

When he is familiar with the various types of radiation, the student will have to learn to distinguish the units which are generally used for measuring their intensities and their biological effects. Methods of detecting and measuring radiations are based mainly on their ionizing effect: radiations add or remove peripheral electrons when they impinge on atoms in the absorbing medium. This ionizing property is especially significant in aqueous media, such as those encountered in living cells, in which profound changes may be induced. The total amount of ionization is related to the energy absorbed (34 electron-volts per ion pair in a gas), so that methods for the detection and measurement of radiations are based largely on this property. It is not always easy in the first instance to grasp the differences between the various methods of measurement. For example, the total energy absorbed may be measured, and this gives the " rad ", which is a unit of radiation dose in terms of the amount of energy absorbed per gram of tissue or other matter. A rad is the quantity of radiation which is associated with the absorption of 100 ergs of energy per gram of substance. On the other hand, the number of nuclear events may be measured, and this gives the " curie ", which is a unit of radioactivity defined as the quantity of any radioactive nuclide in which the number of disintegrations per second is 3.7×10^{10} (approximately the number of atomic disintegrations per second occurring in one gram of radium). The difference between " rad " and " roentgen " should be made clear: the latter is a unit of measurement of ionizing radiation and should in principle be applied only to X- or gamma radiation; a " roentgen (r) " is defined as the quantity of X- or gamma radiation, the associated corpuscular emission of which produces, per 0.001293 grams of air, ions carrying one electrostatic unit of electricity of either sign.

In addition to measurement, the question of dosage must also be dealt with—total-body dose, depth dose, etc. In order to demonstrate the difference between pharmacological doses and the exposure doses so far employed in radiology, it may be pointed out, for example, that the LD_{50} of tetanus toxin for a dog is about one million times that for a mouse, whereas the radiological LD_{50} is, with respect to X-rays, the same for both animals.

Although rapid progress has been made in nuclear physics, there are still gaps in our knowledge of the biological effects of radiations. These effects are made complex by a number of factors such as: the difficulty of defining disturbances in delicate cellular processes whose normal mechanism is still not fully understood; the difficulty of accurately assessing the dose absorbed by the tissues; the special sensitivity of complex organisms like the human body to ionizing radiations. For example, a dose of 600 roentgens, which might be fatal in whole-body irradiation, corresponds to an accrued energy scarcely equivalent to that resulting from the normal metabolism of body tissues during a few seconds. Nevertheless, students must know the essential characteristics of the tissue changes brought about by ionizing radiations. In addition to possible sequelae after prolonged local irradiation and whole-

body irradiation, it is necessary to know the hazards of internal contamination by radio-active substances—hazards which are increasing with the growing use of radio-active elements in research, diagnosis and therapy, and also with the accumulation of radio-active waste from nuclear fission.

This instruction on radiation pathology will be given during the clinical period and it would seem desirable to organize a special course on radiation medicine within the radiological services. Such a course would refresh the student's previously acquired knowledge of physics; he would be taught the numerous and interesting uses of radiations, and his attention would be constantly drawn to the dangers of their incorrect utilization—this being all the more important in that isotopes are being used increasingly in clinical examinations so that radiation hazards are not confined to radiology and radiotherapy. Additional precautions are necessary in the handling of these radio-active substances. The student will also have to become acquainted with the clinical features of the acute, serious, possibly fatal syndrome caused by whole-body irradiation.

Of all the scientific problems which the use of nuclear radiation raises, the most serious and alarming is undoubtedly that of its genetic effects. During the clinical period, therefore, a short time should be devoted to a fresh study of genetics from the point of view of the relationship between disease and acquired mutations in human population groups. The role of heredity as an etiological agent should be dealt with, wherever appropriate, by all teachers giving clinical instruction. During the medical course great emphasis should be laid on genetic hazards, and in this connexion diagnostic and therapeutic radiology services will bear a heavy responsibility.

Nuclear energy and public health

Sources of atomic energy constitute a risk not only to those engaged in the production of such energy but also to people living near these sources. This risk is too small, however, to justify relinquishing one of the most powerful means of improving human well-being. Nevertheless, it raises new public health problems. Sources of atomic energy, the utilization of ionizing radiations and radio-active isotopes, and the accumulation of large quantities of radio-active waste are all factors calling for preventive action for which public health workers as a whole must be trained. Two examples will suffice to demonstrate the kind of role such personnel may have to play.

No definite conclusions have yet been arrived at with regard to the possibility of preserving food and sterilizing equipment by means of radiation, but this method may prove to be of great practical interest. It has been found that all types of food can be sterilized by cathode rays (electrons) and although some physical and chemical changes are generally noted, new techniques such as irradiation at low temperatures and low oxygen tension may reduce radiation sensitivity in foodstuffs which, in any case, irradiation preserves for a much longer period. This industrial application, however, raises such problems as: (1) the effect irradiated foods may have upon the health of the general population, including toxic effects, if any; (2) the necessity to develop an analytical test comparable to the phosphatase test for determining the adequacy of pasteurization of milk, to indicate whether adequate radiation has been provided; (3) the possibility that food may tend to spoil more rapidly following subsequent exposure to bacterial infection, owing to the destruction of protective factors affected by irradiation.

The second example is the disposal of radio-active waste. Solid waste can be incinerated, buried in the ground or dumped in the sea. Weakly radio-active liquid waste can be discharged into the main sewers. There remains the much more difficult problem of treatment of highly radio-active waste. Up to the present time, tank storage has been the method most commonly employed and there has so far been no serious accident. Nevertheless, if nuclear power stations are to be constructed near large centres of population, the precautions taken will certainly have to be reinforced.

From these two examples it will be realized that the members of the public health services will have to be responsible for many tasks, such as the detection and assessment of radio-active contamination of soil, air and foodstuffs, protection of personnel, the control of the radio-active substances themselves, etc.

These two examples also make it clear that health personnel may be required to engage in educational activities so as to inform the general public, who react so strongly to any mention of atomic energy. People must be informed of the public health repercussions of the preservation of food by irradiation (which is of direct interest to them), of the presence of radio-active waste in storage or buried in the ground, etc. In fact, the public information side of atomic energy is of paramount importance since the only way of reassuring people is to provide them with objective information.

It is obvious, therefore, that health personnel must have some knowledge of nuclear energy matters. Naturally, the nurse will not be expected to have the same knowledge as that demanded of a medical officer of health, so that elementary training courses for certain categories of staff will be just as necessary as more advanced or specialized training. The courses will all cover physical and biological principles fairly thoroughly. They will also deal with the applications of nuclear energy and radiation, the risks involved and the protective measures which must be applied, the level of instruction given varying with the nature of the course.

Governments, ministerial departments, educational authorities and the general public must be made to understand that there can be no effective protection against the dangers of atomic energy unless medical and health workers receive appropriate training. Both the reports on which this article is based emphasize that one of the essential prerequisites for such training is the better teaching of mathematics and physics in schools of all categories and in universities. Among other recommendations contained in the fourth report, the final one—specially stressed by the Committee—is of great interest. In it, the Committee suggests that, in order to make information, definitions and practical advice more readily available, WHO should —with the co-operation of the best experts available—publish a handbook to serve as a reference manual for public health workers.

There are a number of annexes to the two reports, dealing in great detail with the subjects to be covered by courses on nuclear energy. These annexes might well be consulted from now on for the organization of undergraduate or post-graduate training.

HEALTH EDUCATION

" Health education is not merely health propaganda or instruction. It aims at enabling the learner . . . to make his own choices and decisions about health matters." With the expansion of public health campaigns it has become apparent that the success of specific health programmes depends on the active participation of a well-informed public. Professional and auxiliary health workers who are in close contact with a wide variety of people should develop the ability to educate and influence them so that they can use to the full the technical health services now becoming more widely available.

In the report of the WHO Expert Committee on Training of Health Personnel in Health Education of the Public [1] the needs and opportunities for such training are defined, the health workers most concerned are indicated, and the broad principles of content, method, organization and aims are stated. The Committee considers that health

[1] WHO Expert Committee on Training of Health Personnel in Health Education of the Public (1958) *Report* (*Wld Hlth Org. techn. Rep. Ser.*, No. 156), 40 pages. Price: 1/9, $0.30, Sw. fr. 1.—. Also published in French and Spanish.

personnel should be encouraged to perceive the educational possibilities of their daily work, and should be shown how to incorporate in it effective health education for the individuals and communities in their charge.

Those most concerned are private practitioners in medicine and dentistry; public health, sanitary and social workers of all types; hospital personnel, including administrators, dietitians, physiotherapists and other specialized workers; and industrial health teams. The Committee felt that certain workers in related fields, such as school-teaching, home economics, agricultural extension services, and fundamental education and community development, should also have the opportunity of appropriate training in health education, by virtue of the important contribution they can make. The achievement of the trained health worker is most significant when it forms part of a well-integrated whole, and is related to the activities of the rest of the community.

The Committee made recommendations as to the type of training suitable for various categories of personnel. Special mention was made of the role of auxiliary health workers, who have a particular usefulness in imparting health information and in raising standards, since they are often in even closer contact with the people than are their professional counterparts. Their initial training should therefore place considerable emphasis on this aspect of their work; demonstration, practice and field exercise should form a large part of the training programme; and regular refresher courses will be valuable in maintaining interest and skill. It was further emphasized that a new cadre of health education specialists is needed to assist with the planning and conduct of health education training, and to provide technical leadership in the organization of health education activities. The preparation given such specialists would be designed to provide a fundamental understanding of the basic social sciences and of the principles and methods of education; it should aim at the establishment of professional standards of integrity and skill.

The importance of the relation of workers in health education both with the public and with other members of the health team is great, and their ethical responsibility profound; the highest standards can best be assured by careful selection and training.

MEDICAL REHABILITATION

The preservation of a healthy society may be said to comprise four phases—the promotion of health, the prevention of disease, the treatment of disease, and medical rehabilitation. Until recently, WHO has been less concerned with the last phase than with the prevention of diseases and injuries likely to lead to permanent disability. Of late, however, an increasing attempt has been made to develop means of physical, vocational and social rehabilitation, and it seemed desirable that expert advice should be obtained on how the Organization might best contribute to the furtherance of health in this field. The WHO Expert Committee on Medical Rehabilitation therefore met to consider from the medical viewpoint the concept and principles of rehabilitation, and the organization of appropriate services for the handicapped, with special reference to the social and economic conditions peculiar to different countries.

The Committee's opinion is embodied in a recently published report,[1] which considers in detail what is already being done for the handicapped person and how far it actually meets his newly defined needs. The basic aim of rehabilitation is the maximum development of the disabled person's physical and mental functions. One of the Human Rights proclaimed by the United Nations

[1] WHO Expert Committee on Medical Rehabilitation (1958) *First report* (*Wld Hlth Org. techn. Rep. Ser.*, No. 158), 54 pages. Price: 3/6, $0.60, Sw. fr. 2.—. Also published in French and Spanish.

is that of the individual " to security in the event of . . . disability . . . in circumstances beyond his control ". The Committee points out that it is essential to distinguish between the terms " disability " and " impairment ". Statistics of physical impairment (by which is understood " the presence of a medically diagnosed physical defect in the individual which reduces his fitness to cope with the requirements of everyday life ") exist for various countries, but do not reflect the true prevalence of " disability ", defined in the report as " a complex evaluation of the reduction of the patient's ability as regards gainful employment ". Much more, and more precise, information on this aspect is required for a thorough assessment of the scope and effectiveness of existing methods of medical rehabilitation, but the first steps in developing rehabilitation programmes to meet present needs should not be deferred on this account.

Questions of specialized, but not limited, interest, such as the psychological aspects of rehabilitation, and the problems characterizing the organization of services in the less developed countries, are fully treated in the report. The Committee stresses that *early* rehabilitation is of psychological as well as physical importance, and that physicians have a particular responsibility to urge patients towards rapid acceptance and readjustment; the factors in the situation and personality of the patient which most affect this mental process are discussed in an annex. In the less developed countries the planning problem is complicated by the very high prevalence of certain handicapping conditions, by the level of development of the general medical and social services, and by the need to relate the rehabilitation services to the social and cultural pattern. Such countries often have a very limited range of employments open to those with a permanent partial physical disability; suggestions for surmounting some of these difficulties in the setting-up of services for the disabled are made in an annex devoted to this question.

The Committee recommends, for further study and action, preliminary investigations aimed at standardizing terminology, assessing the nature of the rehabilitation problem in various countries, determining how existing social security services may be co-ordinated with rehabilitation machinery, revising some aspects of technical and medical training programmes, and developing techniques for assisting not only the orthopaedically handicapped and those with impairment of the special senses, but the even more frequent cases of disability arising from circulatory, respiratory and digestive disorders.

Since the basis of the concept of rehabilitation is that medical cure should be followed by social cure, it is clear that co-operative programme planning is necessary between medical, public health, education, welfare, social security, employment and voluntary organizations throughout the service, at the levels of national policy, of local administration, and of immediate application to the individual. Liaison between physicians, hospitals and health departments would be invaluable for case-finding purposes, and local administrative machinery should not be allowed to impede personal contact among the medical, social and rehabilitation workers and their patients. As the Committee concludes: " . . . perhaps one of the greatest problems to be faced is that of reconciling the demands of organization with the needs of simple humanity as expressed in the care of the individual patient ". By its analysis of the fundamental features of this branch of public health, the report should help to bring about a rationalization in the planning of medical rehabilitation services in whatever background they may develop.

Health Legislation

NOTIFICATION OF COMMUNICABLE DISEASES: A COMPARATIVE STUDY

Cases of communicable disease must be notified to the public health services so that preventive measures may be taken. Although the collaboration of medical practitioners is essential, it will be difficult to obtain if the public health services fail to take action when cases are notified, or merely use the notification for statistical purposes. On the other hand, if notification benefits their patients and the administrative burden involved is not too heavy, medical practitioners can reasonably be expected to collaborate. These considerations must be taken into account when laws and regulations on the notification of communicable diseases are being drafted or amended.

Among the earliest laws on the notification of communicable diseases were those of Norway (1860), the Netherlands (1872), Sweden (1875), Switzerland (1886), Italy (1888), the United Kingdom (1889), France (1893), Uruguay (1897), Japan (1897), and Chile (1899).

At the present time notification is required by law in almost all countries. The various diseases to be notified to the health authorities are not necessarily included in a single law. Tetanus, anthrax or ancylostomiasis may be notifiable pursuant to laws on the notification of occupational diseases; food poisoning pursuant to food hygiene laws; and tuberculosis, leprosy, malaria, and the venereal diseases pursuant to special laws dealing solely with those diseases.

A recent study in the *International Digest of Health Legislation* [1] surveys the legislation of some fifty countries, as well as that of about a dozen territorial subdivisions of two countries with decentralized health administrations. The study is devoted solely to general laws on the notification of communicable diseases.

The list of notifiable diseases included in each law may be subdivided into classes, although this is not normally the case in the English-speaking countries. In France the diseases are classified according to whether their notification is compulsory or optional. In Syria there are also two classes: diseases which are notifiable throughout the Province and those whose notification may by order be made compulsory throughout the Province or in specified areas. In Venezuela a distinction is made between diseases which must be declared immediately and those which must be notified within five days. The Federal Republic of Germany and Austria each divide their lists into three classes: quarantinable diseases, other communicable diseases, and carriers. There are four classes in the German Democratic Republic, and six in the Belgian Congo, i.e. quarantinable diseases, epidemic diseases, endemic diseases, food poisoning, other communicable diseases of an epidemic nature (malaria, bilharziasis, etc.) and deficiency diseases in general. Non-communicable diseases, such as lead poisoning and beriberi are sometimes found in the lists of notifiable diseases. The Italian list also contains six classes: the first relating to diseases notifiable in the population in general, and the others to certain special cases (scabies and ringworm in schoolchildren, venereal diseases in hospitals and among prostitutes, tuberculosis in hospitals and among domestic servants, etc.).

[1] See *Int. Dig. Hlth Leg.*, 1958, 9, 606. This survey will be issued in the form of an offprint (price: 3/6, $0.70, Sw. fr. 2.—).

In certain countries and territories, for example, Finland, Japan, Hong Kong and Viet Nam, only about 15 diseases are notifiable. On the other hand, lists containing between 60 and 70 diseases are found in Czechoslovakia, Honduras and parts of the United States (Iowa and Colorado). Most lists, however, contain between 20 and 30 diseases. The terms used to describe diseases are often vague, sometimes referring only to a symptom or a morbid entity of a general nature, for example, diarrhoea, meningitis or encephalitis, without being more specific. The definition of puerperal fever varies. In some countries it is defined as a febrile condition occurring in a woman within 21 days of childbirth or miscarriage, in which a temperature of 38°C or more has been sustained during a period of 48 hours or has recurred during that period; in others it is defined as any febrile condition occurring in a woman in whom a temperature of 38°C or more has occurred within 14 days of childbirth or miscarriage.

The notification of carriers is rarely required. Where it is, the carriers mentioned are usually those of typhoid and paratyphoid fevers and less often of bacillary dysentery and diphtheria. In Quebec, Canada, all carriers are reportable to the health authorities since they are classified as patients suffering from one of the notifiable communicable diseases.

In some countries, householders may be obliged to notify cases of communicable disease. In France this obligation was at first confined to medical practitioners, but was subsequently extended to the principal occupier—head of the family or establishment—of the premises in which the patient lay and, in default thereof, in the following order, to the spouse, the nearest ascendant of the patient, or any other person residing with him or caring for him. In Germany, on the other hand, notification was originally required of the head of the household in the first place; medical practitioners were later made primarily responsible. In the United Kingdom the notification of certain diseases is the responsibility of both the principal occupier and the medical practitioner in attendance, but in practice it usually falls to the medical practitioner.

Notification is normally required within 24 hours, but the time limit may be 12 hours (Alberta, Canada), or 48 hours (Portugal) or, for certain diseases, 5 days (Venezuela). Most countries require the quarantinable diseases to be notified immediately by telephone or by telegram. Notification is, of course, normally made to the health authorities; in some countries other civil authorities must be informed as well.

Variations such as those mentioned above may exist not only between countries but also within countries which have decentralized health administrations. In Switzerland, a large measure of uniformity in notification procedure has been achieved by means of a federal law that applies to all the cantons. In the United States of America and Canada, the lack of uniform procedure has led to attempts to establish basic principles for laws and regulations on the subject. Similar attempts have also been made on the international level.

The subject matter of the study is arranged under the following headings: introduction, legislation, classification of notifiable communicable diseases, list of notifiable diseases, notification of carriers, when notification must be made, who must make notification, to whom notification must be made, conclusion. Appendix A: notifiable communicable diseases and other conditions; Appendix B: forms prescribed for notification. Bibliographical references.

Notes and News

Identification in brucellosis

One of the difficulties about *Brucella*, the causative organism of brucellosis, is the confusingly large number of strains that have been reported in various places and from various animal species. The result is that very often the species of *Brucella* concerned is in doubt. In 1950, the Joint FAO/WHO Expert Panel on Brucellosis recommended that type strains of *Brucella* be exchanged between certain laboratories and an attempt made to identify the species. This exchange was carried out, and in 1952 the Joint FAO/WHO Expert Committee on Brucellosis discussed the work done and the reports submitted on identification methods, noting that most strains, when freshly isolated, had all the characteristics, biochemical and serological, of one or other of the recognized *Brucella* species. There were, however, certain strains with other combinations of characteristics, and the Committee felt that monospecific sera would be an aid in typing them provided satisfactory sera were available. But it was not easy to prepare such sera, and there were no hard-and-fast rules which, if followed, would guarantee a satisfactory product.

Among the strains which the Committee decided should be designated as type strains was *Br. abortus* 544 (Weybridge), and from the Central Veterinary Laboratory, Weybridge, England, which produced this strain, comes a report on a method for the preparation of reliable monospecific *Brucella* sera.[1] Large volumes of sera have been prepared at the Laboratory for distribution to laboratories throughout the world which wish to type *Brucella* cultures or compare their sera with those of Weybridge.

The report describes the method developed at Weybridge in detail, the author expressing the hope that it might encourage other laboratories to employ serological typing as well as biochemical tests for the identification of species.

Vaccination for brucellosis

In the vaccination of cattle against brucellosis, an attenuated strain, *Brucella abortus* strain 19, is widely used because of its high immunizing power and low virulence. This strain has also been used in human beings to confer immunity, but some authorities have reservations concerning this method. Consequently research on the use of dead vaccines for human immunization is continuing.

A preliminary report has been published on a recent attempt in the United States to gauge the value of a dead vaccine in human beings.[2] Adult male volunteers were selected at random and given an intradermal test with a standard dose of brucellergen; blood samples were taken at the same time to ascertain the presence of detectable antibody, and a month later to compare with the previous results. About 14% of the volunteers were sensitive to the test, and about half of these had systemic reactions as well. On the other hand, the results of the blood tests a month later showed that the use of the allergic skin test did not cause a rise in antibodies or stimulate the phagocytic activity of the blood, even in those cases where it had caused an allergic response. It did not therefore confuse the picture for later investigations.

The individuals negative to the skin test were injected intramuscularly with ether-killed *Brucella* vaccine, half with alum-precipitated vaccine, half with the vaccine in saline. The injections were repeated six months later for the first group, and one month and six months later for the second. After the first injection both groups had

[1] *Bull. Wld Hlth Org.*, 1958, 19, 177

[2] *Bull. Wld Hlth Org.*, 1958, 19, 197

slight to moderate local soreness, and about 17% had systemic reactions in the form of raised temperature, malaise and headache; but after the other injections systemic reactions were practically non-existent. The blood was tested at two-monthly intervals, and it was found that there was a rise in antibodies and in phagocytic activity which tended to decline towards the end of the six-month period. Post-vaccination serum from the volunteers protected mice from a lethal dose of *Br. abortus*, whereas prevaccination serum did not.

Blood was taken after the booster dose of vaccine injected six months later, and both the antibody level and phagocytic activity had gone up again. The study of the immunological response of the volunteers is being continued.

Yaws control in western Nigeria

Five million cases of yaws have been treated in Nigeria during a mass campaign launched in 1954 by the Federal Government with WHO and UNICEF assistance. The following details on the organization and progress of the campaign in the Owo Division of western Nigeria are based on a report by Dr J. Fraisse, WHO Senior Medical Officer to the Nigerian Yaws Control Project.

Owo is one of the four Divisions of the Ondo Province, and has a population of almost 250 300. The initial yaws treatment survey in this Division, which began in February 1955 and ended in March 1956, was carried out by a medical field unit consisting of a medical officer and 20 assistants. Of the persons examined (78% of the total population), 10.6% were found to have active yaws and were treated on the spot. Six months after the initial treatment survey began, ten "yaws scouts" were recruited locally and given six weeks' training. They were then ready to start resurveys under the supervision of a leader and two assistants from the team which carried out the initial treatment survey. The resurveys were made on a house-to-house basis, and on-the-spot treatment was given to all active cases and contacts.

Three resurveys were carried out between October 1955 and July 1958, each of them lasting about nine months. Each time, the proportion of cases was found to have dropped, as follows:

	Percentage of active cases
Initial treatment survey	10.6
First resurvey	1.3
Second resurvey	0.9
Third resurvey	0.1

The last resurvey covered about 88% of the total population.

In August 1958, systematic resurveys were discontinued, and local centres took over the detection and treatment of cases. Each of the "yaws scouts" has now been assigned to one of ten fixed yaws treatment centres, with the responsibility of carrying out house-to-house surveys in the area it serves, and of directing active cases to the local dispensary for treatment. The dispensaries are visited once a fortnight by the leader of the former resurvey team, who keeps a record of all cases diagnosed and treated, and takes any steps that may be necessary to eliminate remaining foci of the disease. These duties will eventually be taken over by the local Rural Medical Officer. It is hoped that this method of supervision will lead before very long to the eradication of yaws from the Division, and that it will be possible in the meantime to train the "yaws scouts" in a wider range of health activities so that they may form the nucleus of a permanent auxiliary medical staff.

Planning basic nursing education programmes

Although the number of qualified nurses is steadily growing, it is not keeping pace with the demand for nursing services. Nursing responsibilities have increased, and many countries are reorganizing or developing their nursing education programmes. WHO has therefore prepared a guide for nurses in a position to influence the planning of basic nursing education, particularly in countries where modern concepts of nursing and nursing education are just beginning to develop.

The first draft of the guide was considered by a representative group of nurses meeting in Tokyo in 1957 and was subsequently sent to selected nurses in various parts of the world for further review and suggestions. A second draft incorporating many of the suggestions received has been made available to a certain number of persons and institutions so that the value of the guide may be tested in practice. In 1960, after a year's trial, the possibility of a general distribution of the guide will be considered.

Persons and institutions interested in trying out the guide may obtain copies on application to the Nursing Section, World Health Organization, Palais des Nations, Geneva, Switzerland.

Study tours in North America and the USSR

A nine-week study tour of poliomyelitis centres in Canada and the United States of America was recently organized by the Pan American Sanitary Bureau, which serves as the WHO Regional Office for the Americas, for virologists from Austria, Chile, French Equatorial Africa, Lebanon, Nigeria, Poland, the United Arab Republic (Province of Egypt), and the USSR. The programme of the tour, which took place between October and December 1958, included training and observation at public health laboratories in Montreal, Montgomery, Ala., and Atlanta, Ga., visits to three pharmaceutical companies producing poliomyelitis vaccine in Detroit, Mich., and Indianapolis, Ind., and study and observation of the safety and potency testing of poliomyelitis vaccines at the National Institutes of Health in Washington, D.C.

A group of 23 public health administrators from various parts of the world took part in a WHO-sponsored study tour of the USSR from 15 October to 22 November 1958. The aim of the tour, which included visits to medical and health centres in Moscow, Leningrad, Kiev, the Georgian SSR, and the Uzbek SSR, was to acquaint the participants with public health administration methods and problems in the USSR.

Malaria in the western Mediterranean countries

A technical meeting on malaria eradication in the western Mediterranean countries was held in Lisbon, Portugal, by the WHO Regional Office for Europe, from 24 to 27 September 1958, following the meeting of the WHO Expert Committee on Malaria (see Chronicle, November 1958). The following countries were represented: France (for Algeria), Italy, Morocco, Portugal, and Spain.

The malaria situation in the European countries of the western Mediterranean is in general satisfactory: the disease has been practically wiped out in Italy and Corsica, and the eradication measures in Spain and Portugal have entered their final phase. In Algeria and Morocco, however, antimalaria operations do not yet cover all endemic areas, but the health authorities wish to undertake eradication programmes as soon as possible, along the lines suggested by the WHO Expert Committee on Malaria and with WHO assistance.

In order to speed up eradication of the disease, Portugal and Spain have decided to organize active surveillance services in areas particularly exposed to the risk of malaria owing to seasonal concentrations of workers or the presence of a few residual cases. The meeting stressed the danger of the reintroduction of malaria into countries with active eradication services by immigrants from overseas territories where the services are not yet adequate. It was noted that no evidence of mosquito resistance to DDT had been observed in any of the countries represented at the meeting.

Inter-Regional Leprosy Conference

An Inter-Regional Leprosy Conference was held, under WHO auspices, at the Institute of Hospital Administration, Tokyo, Japan, from 20 to 24 November 1958. The following countries and territories in the South-East Asia, Eastern Mediterranean and Western Pacific Regions were represented: Burma, Ceylon, Fiji, French Settlements in Oceania, Hong Kong, India, Indonesia, Iran, Japan, Korea, Federation of Malaya, Pakistan, Territory of Papua and New Guinea, Philip-

pines, Taiwan (China), Thailand, and Viet Nam.

The main subjects of discussion were epidemiological surveys, leprosy control services (treatment, prevention, training of staff, health education, assessment of results), and rehabilitation (development of surgery and physiotherapy, social aspects). Reports on recent advances in various fields of leprology and the progress of internationally assisted leprosy control projects were presented by consultants invited by WHO for the purpose.

Filariasis in South-East Asia

Valuable research in the field of filariasis has been carried out in India during the past few years, and there is hope that effective medical control of the disease may become possible. Work by the Indian Council of Medical Research in the States of Orissa and Kerala has given particularly useful results and, in implementation of recommendations arising from the Orissa studies, the Government of India organized 22 filariasis survey units as part of its first five-year plan. These units—each of which covers a population of 300 000—have now nearly completed their work, and 38 control units are in operation. A training programme was also started, and to date 70 medical officers and over 100 inspectors have been trained. Progress in the fight against filariasis has also been made in Ceylon, where the disease is reported to be no longer a problem in rural areas.

In October-November 1958, filariasis experts from Burma, Ceylon, India, Indonesia and Thailand spent four weeks visiting filariasis control centres and programmes in India and Ceylon, under WHO auspices. It is hoped that their report on this study tour will stimulate action against the disease throughout South-East Asia.

Training of health physicists

A five-week course in health physics, held at the Indian Department of Atomic Energy, Bombay, in November-December 1958, was attended by 27 physicists and physicians from the South-East Asia Region and 4 from the Western Pacific Region. Designed for physicists and others who will serve as supervisors and instructors in radiation protection, the course was sponsored by the Government of India and WHO, with the co-operation of the US Atomic Energy Commission. The Director of the course was Dr Elda E. Anderson of the Oak Ridge Laboratory, Tenn., USA, who had previously directed international courses for health physicists held, under WHO auspices, in Belgium and Sweden.[1]

Health education in the Eastern Mediterranean Region

During the past few years, an increasing number of countries and territories in the Eastern Mediterranean Region have come to recognize the value of health education of the public. In seven of them, health education divisions or departments have been incorporated in the public health services.

Health education programmes in the Region have had striking results. In Cyprus, for example, health education by general practitioners has been to a great extent responsible for a drop in infant mortality from 66 deaths per 1000 live births in 1947 to 31 deaths per 1000 in 1957. In Ispahan, Iran, the inhabitants believed that the use of the public shower-baths was contrary to the tenets of their religion, but were dissuaded from this opinion by a health education campaign in which the religious authorities took part. In the Sudan, health education has been extremely successful in obtaining the co-operation of the public in antimalaria campaigns.

A seminar on the health education of the public was held in Teheran, Iran, under WHO auspices, from 28 October to 9 November 1958. It was attended by some 40 sanitarians, physicians and professors from 14 countries and territories in the Eastern Mediterranean Region. A number of inter-governmental and private organizations, including UNESCO,

[1] See *Chron. Wld Hlth Org.*, 1958, **12**, 37.

FAO, UNICEF, UNRWA, the Arab League and the Rockefeller Foundation, were represented. The seminar, which was the first of its kind to be sponsored by WHO in the Eastern Mediterranean Region, discussed the place of health education in health programmes and its contribution to their success, and reviewed health education achievements in the various countries and territories of the Region.

Improving hospital services

The large hospital is by far the most complex branch of the medical services. It is also the most expensive, and year by year becomes more expensive still. At the same time, the demand for hospital services is growing, not only as a result of the general increase in population, but because of the development of medical and social services for the public. In many countries, the combination of rising costs and increased demand has produced a hospital crisis.

In Poland, for example, the provision of free treatment has led to a greatly increased demand for hospital services, and the number of hospital beds per 1000 population rose from 2 in 1938 to almost 5 in 1956; this figure is, however, still considered inadequate. In England and Wales, where the number of hospital beds per 1000 population is more than twice as large, the average waiting time for general surgical cases before admission to hospital was 53 days in 1956,[1] and by the end of the year there was a total of 431 000 names on the hospitals' waiting lists. In Sweden, during 1956, the average number of persons in hospital on any one day amounted to 1.3% of the population.

As medical knowledge advances, hospital equipment becomes more complex, and new staff-members are continually required to apply new specialities. As a hospital is in operation for 24 hours a day, improved working conditions (e.g., shorter working hours) also mean larger staffs. Thus, in certain hospitals in the United States of America, the number of staff per 100 patients rose from 156 to 213 between 1946 and 1956, and it is estimated that the cost of hospital care in the United States increases by 5-9% every year. In the Helsinki General Hospital, Finland, the daily cost per patient rose by 11% between 1955 and 1956.

Ways of dealing with these problems were considered at a meeting on the improvement of hospital services in Europe, which was held in Stockholm by the WHO Regional Office for Europe from 3 to 13 November 1958. The meeting was attended by some 60 medical practitioners, clinicians, hospital administrators, nurses and social workers, representing the following countries: Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, USSR, and Yugoslavia. The principal questions discussed were: assessment of the efficiency of hospital services; services needed by the community (out-patient services, services at home, emergency services, etc.); health education of patients and their relatives; financial aspects (comparison between costs of domiciliary and in-patient hospital services); public relations; training of administrators and other staff.

The status of auxiliary nurses

Several countries, faced with the shortage of trained nurses, have been employing auxiliaries for various nursing tasks. Public health leaders now feel that it is necessary to assess the need for auxiliaries, and to define their functions and categories and the content and duration of their training.

A Conference on Auxiliary Nursing was held, under WHO auspices, in New Dehli, India, from 3 to 15 November 1958. It was attended by senior nurses and nursing administrators from the 12 following countries: Afghanistan, Burma, Ceylon, India, Indonesia, Iran, Japan, Pakistan, Sudan, Taiwan (China), Thailand, and the United Arab Republic (Province of Egypt).

[1] This figure does not cover teaching hospitals, for which waiting periods are generally longer.

The Conference recommended a course of basic training to permit auxiliaries to act as assistant nurses, and suggested that full nursing training should be made available to auxiliary nurses who had qualified in the basic course. It was the general feeling of the Conference that auxiliary nursing personnel are permanent and essential members of the health team, and that this fact needs to be accepted both by professional health workers and the public.

Asian seminar on mental health and family life

The physical, emotional and social well-being of the individual and his family in relation to the changing conditions of modern life was the main topic of discussion at the first Asian seminar on mental health and family life, which was held at Baguio, Philippines, from 7 to 20 December 1958. The seminar was sponsored jointly by the Philippines Government (through the Family Life Workshop of the Philippines and the Philippine Mental Health Association), the World Health Organization, the World Federation for Mental Health, and the Asia Foundation. It was attended by some 50 specialists in the fields of psychiatry, sociology, anthropology, public health, nursing and home economics. Seventeen Asian countries were represented.

The seminar gave participants an opportunity to exchange information on family life in their respective countries, taking into consideration the cultural, social, economic and other factors operating in different areas, and to formulate general principles for ensuring the well-being of the family as it adjusts itself to the changes that are taking place in Asia. The discussions were arranged to cover the psychological aspects of life from birth to old age, with special emphasis on basic Asian living patterns and their modification by changing conditions. An exhibition held in connexion with the seminar included photographs of typical Asian families, small models of typical houses, and children's paintings; documentary films were also presented.

Inter-regional bilharziasis training course

An inter-regional bilharziasis training course was held by WHO at the Endemic Disease Research Institute, Ministry of Public Health, Cairo, United Arab Republic, from 10 November to 31 December 1958. It was attended by 24 medical officers, ecologists, engineers and sanitarians from 12 different countries. All WHO regions were represented, with the exception of the European Region.

The aims of the course were to review the basic concepts of bilharziasis control and the latest developments in this field, to make participants aware of the gaps in present knowledge and the need for further research, and to enable them to carry out effective control programmes. The lectures and demonstrations covered: epidemiology; diagnostic techniques; therapy; ecology of molluscan hosts with special reference to factors conditioning their habitat and breeding conditions; malacological techniques; control and evaluation procedures; water management with special reference to irrigation; environmental sanitation, socio-economic conditions and health education in relation to bilharziasis.

Industrial and occupational health

The rapid growth of industrialization in several countries of South-East Asia has raised a number of new health problems which need to be tackled at an early stage. A Conference on Industrial and Occupational Health in South-East Asia, sponsored jointly by WHO and ILO, was held in Calcutta, India, from 24 November to 6 December 1958. The 31 participants in the Conference represented the following countries: Afghanistan, Burma, Ceylon, India, Indonesia, and Thailand.

The Conference made a number of recommendations intended to guide the countries of the Region in the planning of adequate and co-ordinated health services for workers. These covered such aspects of the problem as: financing, organization and training; health education of management and work-

ers; legislation; and co-operation between occupational health services and community health services.

Specifications for food additives

It is usually impossible to eliminate all impurities from substances used as food additives. The establishment of maximum permissible levels for impurities in such substances was therefore discussed by the FAO/WHO Expert Committee on Food Additives, which met in Rome from 1 to 8 December 1958. Three main points were taken into consideration in this connexion: the toxicity of the impurity; the quantity of the particular food additive likely to be consumed; and the possible effect of the impurity on food ingredients. The Committee drew up tentative specifications for a selected group of antimicrobials and antioxidants used as food additives, indicating methods of identifying the impurities and determining their maximum levels. Methods of assay were considered in conjunction with purity specifications, as the choice of method may depend on how far the possibility of the presence of interfering substances has been excluded.

Some of the chemicals used as food additives are also used for medical preparations, and their specifications have been established in the various pharmacopoeias. In considering whether any deviations from these specifications could be recommended, three points were borne in mind: (*a*) chemicals used as food additives are always taken by mouth; (*b*) chemicals used as food additives will usually be ingested over a long period, even over a whole lifetime; (*c*) medicaments are taken under medical supervision, whereas there is no such control on food. The Committee also considered the question of preparing a reference book for food additives along the lines of the *Pharmacopoea Internationalis*.

The members of the Joint Committee were: Dr E. Boehm (United Kingdom), Dr R. A. Chapman (Canada), Professor A. C. Frazer (United Kingdom), Professor O. Högl (Switzerland), Dr W. MacNaughton (USA), Dr J. H. Mahoney (USA), Dr B. L. Oser (USA), Dr O. Pauli (Germany), Dr J. F. Reith (Netherlands), Professor S. W. Souci (Germany), Dr H. C. Spencer (USA), and Professor R. Truhaut (France). Dr I. Nir-Grosfeld (WHO) and Dr A. G. van Veen (FAO) were joint secretaries to the Committee.

People and Places

Institutional care of children

Towards the end of 1958, Dr J. P. Boekhold, of the Netherlands, visited WHO Headquarters in Geneva, the WHO Regional Offices in Alexandria and New Delhi, and children's institutions in India, Iran, Pakistan, and Syria, to gather material for a study on health aspects of the care of children deprived of normal home life. This study is being prepared at the request of UNICEF, and will be presented to the next session of the UNICEF Executive Board in March 1959.

Dr Boekhold has been Child Health Officer for the Province of South Holland since 1944, and is in charge of a day-care centre for children in Leiden.

Mental health in Europe

As a contribution to World Health Day 1959, whose theme is " Mental Illness and Mental Health in the World of Today ", Hervé Bazin, the well-known French writer, is preparing a study on developments in the prevention and treatment of mental diseases in Europe.

Mr Bazin is visiting psychiatric hospitals and mental health clinics in Belgium, Denmark, Germany, the Netherlands, Portugal, Switzerland, the United Kingdom and the USSR to gather material for his study.

WHO Area Representative for Nigeria

To establish effective contact with health authorities and an adequate co-ordination of WHO activities

with those of other health services in Nigeria, the WHO Regional Office for Africa has appointed Dr A. D. Talec, of France, as Area Representative in that country. Dr Talec will have the task of studying the health needs of the area and keeping them under continuous review; this will enable him to help the authorities in co-ordinating all resources available for health, thereby strengthening the national health administration and paving the way for the integration of internationally assisted health projects into the general national health programme.

A graduate of the Medical Faculty of the University of Bordeaux, Dr Talec comes to WHO from the Ministry of Public Health and Population, France, where he was Director of Health Services with responsibility for the organization and administration of public health services in French overseas territories. He has had more than twenty years' experience of public health work in Africa and South-East Asia.

Health education in Israel

WHO has assigned a Visiting Professor to the Hadassah Medical School of the Hebrew University, Jerusalem, to help develop training and research programmes in health education. He will also advise the Government and other agencies on health education matters.

Mr Roy Steuart, Senior Lecturer in Health Education, University of Natal, and Director of Health Education, Institute of Family and Community Health, Durban, Union of South Africa, has been selected for this assignment, which will be for a period of two years, starting early in 1959.

Taiwan trachoma control campaign

An account of the WHO-assisted trachoma control campaign in Taiwan (China) recently appeared in the Chronicle (November 1958). Dr Paolo Guerra, of Italy, is at present in Taiwan to assess the progress of the campaign and advise on its expansion and continuation.

Dr Guerra, who obtained his medical degree from the University of Turin, is Chief Ophthalmologist in the Federation of Ethiopia and Eritrea and a former Consultant Ophthalmologist to the High Commissioner for Health and Hygiene, Rome.

Training of occupational health workers

Professor E. W. Baader, of the Institute of Occupational Health, Hamm, Germany, has been appointed WHO Visiting Professor at the Department of Occupational Health attached to the High Institute of Public Health, Alexandria, United Arab Republic, succeeding Professor Leonard J. Goldwater [1] and Professor Sven Forssman.[2] He will spend three months at the Institute lecturing on industrial toxicology.

A toxicologist of international repute, Professor Baader is Honorary Professor of the Pathology of Occupational Diseases at the University of Münster, and a former Director of the Institute of Occupational Diseases, University of Berlin.

Nursing appointment

Miss Mary L. Brice, the newly appointed WHO Country Nursing Adviser in Burma, will help the Burmese Government to extend and improve nursing and midwifery training services.

Miss Brice is a former Principal Sister Tutor at the Cheltenham Group Hospital and at the United Sheffield Hospitals, and has also held senior teaching posts at hospitals in Australia and Iran.

Environmental sanitation in Taiwan

During the past two years, WHO has been helping the Government of Taiwan (China) to plan storm drainage and sanitary sewerage systems for the city of Taipeh. A WHO consultant, Dr H. Rohde, Chief Engineer and Deputy Director of the Ruhr River Association, Essen, Germany, recently went to Taiwan to review the work done in this connexion to date, and to advise on the final plans and their implementation.

A graduate of the Technische Hochschule, Karlsruhe, Dr Rohde has had extensive experience in the design and construction of sewage treatment plants in Germany.

[1] See *Chron. Wld Hlth Org.*, 1957, **11**, 327.
[2] See *Chron. Wld Hlth Org.*, 1958, **12**, 319.

Review of WHO Publications

Bulletin of the World Health Organization, 1958, Volume 19, Number 6 (pages 953-1134)

In the first article in this number of the Bulletin, G. Žarković & M. Radovanović describe a survey carried out in 1956 to investigate the extent and epidemiology of endemic goitre in Bosnia and Herzegovina. A sample of 1% of the population over 6 years of age was examined, and the prevalence of goitre was found to be rather greater than had been supposed, one male in five and rather more than one female in three showing signs of the disease. No correlation could be established between the prevalence of goitre and the iodine content or degree of pollution of the drinking-water. Some working hypotheses are offered in explanation of these findings.

J. Hadjinicolaou contributes a study of the *Phlebotomus* populations in certain areas of Greece in the summer of 1957. Sandflies were found to have become practically extinct in all areas where systematic spraying with residual insecticides had been carried out since the vector control programme was started in 1946. On the other hand, they were still plentiful in villages which had not been included in the programme, and fairly plentiful in unsprayed towns and cities. Susceptibility tests on *P. papatasii*, which was by far the predominating species in most places, showed an LC_{50} for DDT of 0.28 at Athens and 0.75 at Chania in Crete; the LC_{50} for dieldrin was approximately 0.2.

A micro-agglutination test for the serodiagnosis of Q fever is described by B. Babudieri. Using the sera of sheep infected with Q fever, the test was found to be approximately 10 times as sensitive as the capillary agglutination test and the macroscopic tube-agglutination test, and more than 20 times as sensitive as the complement-fixation test.

In 1953-55 an investigation was carried out, under the sponsorship of the Indian Council of Medical Research, to determine the relative merits of the serological tests for syphilis used in eight major Indian laboratories. The results of this investigation are given in a report by R. V. Rajam. In each laboratory the Wassermann test, the Kahn standard test and the VDRL slide test were evaluated as to specificity, sensitivity and reproducibility. The VDRL test proved to be the most satisfactory on the average (specificity, 97.6%; sensitivity, 95.2%; reproducibility, 87.2%), and the adoption of this test as the only routine serological test for syphilis in all laboratories in India is therefore recommended.

J. R. Busvine describes a simple method of measuring insecticide resistance in bed-bugs. Batches of adult bugs are put on small pieces of filter-paper impregnated with oil solutions of insecticides, and mortality is estimated after 5 days at 25°C. In both *Cimex lectularius* and *C. hemipterus*, two kinds of resistance can develop, either independently or in conjunction. One involves DDT, methoxychlor and analogues; it cannot be overcome by the addition of DMC. The other involves γ-BHC, dieldrin and various other chlorinated cyclodiene insecticides. The resistance spectrum of bed-bugs towards this group of compounds resembles those of *Anopheles gambiae* and *Musca domestica*, indicating similarity in the defence mechanism.

The behaviouristic resistance of *A. albimanus* to DDT was observed in populations on the Rio Chagres, Panama, by Trapido in 1952. A report on laboratory studies on this phenomenon, which were carried out in 1958, is contributed by A. W. A. Brown. Measurement of the excitatory effect of DDT in inducing flight showed that the mean excitation times for engorged adults from the Chagres populations of Gatuncillo and Santa

Rosa were, respectively, significantly and almost significantly less than those for a population from an untreated area and for a laboratory population which had never encountered DDT. There was no difference in the susceptibility levels between the Gatuncillo, the untreated and the laboratory strains when they were confined to DDT deposits for one hour.

Some recent observations made in Afghanistan, Ceylon and Burma on adults of *Anopheles culicifacies* and *A. aconitus* are described by W. Büttiker. The specimens from Ceylon and Burma, in particular, showed a peculiar physiological process in which, at the beginning of the dry season, the coagulated, dark red, and almost desiccated stomach contents indicated a period of partial quiescence. As there were in most cases no signs of apparent growth of the fat-body, it appears that a hitherto undescribed form of physiological behaviour occurs under certain climatic and seasonal conditions.

Nozzle erosion can result in considerable economic loss to a malaria control programme owing to over-application of insecticides. The factors responsible for increased discharge due to nozzle erosion may vary considerably. R. P. Lonergan and L. B. Hall describe a method of evaluating spray nozzles in accordance with the nozzle erosion conditions prevailing in any particular programme. This method had the advantage of requiring only two discharge-rate determinations, instead of a series.

Notes are included on the following subjects: the blood-serum assay of the blood-level duration test for oily injection of procaine penicillin (J. W. Lightbown, M. V. Mussett & D. Sulitzeanu); the significance of low titres in the sero-agglutination test for brucellosis in cattle (O. Sandvik); causes of death in children in rural communities in Guatemala (M. Béhar, W. Ascoli & N. S. Scrimshaw); resistance to DDT in *Anopheles stephensi* in southern Iraq (G. Gramiccia et al.); the susceptibility of adult female *Anopheles gambiae* to insecticides in East Africa (J. A. Armstrong); the inheritance of DDT-resistance in *Aëdes aegypti* (M. Qutubuddin); insecticide susceptibility in certain anophelines in relation to season and temperature (M. Duport & M. Sandulesco); a pit shelter for mosquito sampling (R. C. Muirhead-Thomson); exophily in anophelines in South-East Asia (W. Bütikker); dieldrin resistance in *Cimex hemipterus* Fabricius (A. Smith); and culture methods for fleas (B. W. Hudson & F. M. Prince).

The list of contents will be found in the advertising section at the end of this number of the Chronicle.

Medical Education : Annotated Bibliography, 1946-1955, Geneva, 1958, 391 pages. Price: £1 15s., $6.75, or Sw. fr. 20.—(clothbound)

In this volume, the World Health Organization presents a bibliography on medical education covering material published between 1946 and 1955, inclusive. It is based on exhaustive research in such sources as the *Quarterly Cumulative Index Medicus*, the *Current List of Medical Literature*, the *Armed Forces Medical Library Catalog*, the indexes and catalogues of the WHO Library and, where necessary, the specialized indexing and abstracting periodicals. Well over 4000 references were collected, virtually all of them were examined and some 2600 were finally chosen for inclusion in the bibliography. In a few cases it was not possible to obtain the original material and the reference cited has not, therefore, been verified.

The concept of medical education as a continuous process has been stressed for many years, but certain limitations were of necessity placed on the scope of this publication. Undergraduate medical education is considered to extend to the time a student receives the degree or diploma which in his country is the requirement for independent practice or for admission to the examination which will permit him to practise. Articles dealing with internship have been included, since in some countries this is considered to be part of the medical course. Throughout the bibliography, special emphasis has been laid on the training of teachers.

International Non-Proprietary Names for Pharmaceutical Preparations

In accordance with paragraph 3 of the Procedure for the Selection of Recommended International Non-Proprietary Names for Pharmaceutical Preparations,[1] notice is hereby given that the following names are under consideration by the World Health Organization as proposed international non-proprietary names.

Comments on, or formal objections to, the proposed names may be forwarded by any person to the Pharmaceutical Section of the World Health Organization within four months from 1 March 1959.

The inclusion of a name in the lists of proposed international non-proprietary names does not imply any recommendation for the use of the substance in medicine or pharmacy.

PROPOSED INTERNATIONAL NON-PROPRIETARY NAMES (*Prop. I.N.N.*): LIST 7[2]

Proposed International Non-Proprietary Name (Latin, English)	*Chemical Name or Description*
dextropropoxyphenum dextropropoxyphene	(+)-4-dimethylamino-3-methyl-1,2-diphenyl-2-propionoxybutane
dimenoxadolum dimenoxadol	dimethylaminoethyl 1-ethoxy-1,1-diphenylacetate
levoproxyphenum levopropoxyphene	(−)-4-dimethylamino-3-methyl-1,2-diphenyl-2-propionoxybutane
nicomorphinum nicomorphine	di-nicotinic acid ester of morphine
norcodeinum norcodeine	*N*-demethylated codeine
normorphinum normorphine	*N*-demethylated morphine
noscapinum noscapine	(−)-2-methyl-8-methoxy-6,7-methylenedioxy-1-(6,7-dimethoxy-3-phthalidyl)-1,2,3,4-tetrahydro*iso*quinoline [name used previously: narcotine]

* * *

[1] See *Off. Rec. Wld Hlth Org.*, 1955, **60**, 3, 55.

[2] Other lists of proposed international non-proprietary names can be found in *Chron. Wld Hlth Org.*, 1953, **7**, 297; 1954, **8**, 216, 313; 1956, **10**, 28; 1957, **11**, 231; 1958, **12**, 102.

In accordance with paragraph 7 of the Procedure for the Selection of Recommended International Non-Proprietary Names for Pharmaceutical Preparations,[3] notice is hereby given that the following are selected as recommended international non-proprietary names.

The inclusion of a name in the lists of recommended international non-proprietary names does not imply any recommendation for the use of the substance in medicine or pharmacy.

Recommended International Non-Proprietary Names (*Rec. I.N.N.*): List 2[4]

Recommended International Non-Proprietary Name (Latin, English)	*Chemical Name or Description*
acetylmethadolum acetylmethadol	6–dimethylamino–4,4–diphenyl–3–acetoxyheptane
alphacetylmethadolum alphacetylmethadol	α–6–dimethylamino–4,4–diphenyl–3–acetoxyheptane
alphamethadolum alphamethadol	α–6–dimethylamino–4,4–diphenyl–3–heptanol
anileridinum anileridine	1–[2–(p–aminophenyl)–ethyl]–4–phenylpiperidine–4–carboxylic acid ethyl ester
betacetylmethadolum betacetylmethadol	β–6–dimethylamino–4,4–diphenyl–3–acetoxyheptane
betamethadolum betamethadol	β–6–dimethylamino–4,4–diphenyl–3–heptanol
betaprodinum betaprodine	β–1,3–dimethyl–4–phenyl–4–propionoxypiperidine
desomorphinum desomorphine	dihydrodesoxymorphine
diethylthiambutenum diethylthiambutene	3–diethylamino–1,1–di–(2–thienyl)–1–butene
dimethylthiambutenum dimethylthiambutene	3–dimethylamino–1,1–di–(2–thienyl)–1–butene
dipipanonum dipipanone	4,4–diphenyl–6–piperidino–3–heptanone
ethoheptazinum ethoheptazine	1–methyl–4–carbethoxy–4–phenylhexamethyleneimine
ethylmethylthiambutenum ethylmethylthiambutene	3–ethylmethylamino–1,1–di–(2–thienyl)–1–butene
hydroxypethidinum hydroxypethidine	1–methyl–4–(3–hydroxyphenyl)–piperidine–4–carboxylic acid ethyl ester
levallorphanum levallorphan	(−)–3–hydroxy–*N*–allylmorphinan
levorphanolum levorphanol	(−)–3–hydroxy–*N*–methylmorphinan

[3] See *Off. Rec. Wld Hlth Org.*, 1955, **60**, 3, 55.

[4] A first list of recommended international non-proprietary names can be found in *Chron. Wld Hlth Org.*, 1955, **9**, 185.

Recommended International Non-Proprietary Name (Latin, English)	*Chemical Name or Description*
metethoheptazinum metethoheptazine	1,3–dimethyl–4–carbethoxy–4–phenylhexamethyleneimine
metheptazinum metheptazine	1,2–dimethyl–4–carbomethoxy–4–phenylhexamethyleneimine
methyldesorphinum methyldesorphine	6–methyl–Δ^6–desoxymorphine
methyldihydromorphinum methyldihydromorphine	6–methyldihydromorphine
myrophinum myrophine	myristyl ester of benzylmorphine
normethadonum normethadone	4,4–diphenyl–6–dimethylamino–3–hexanone
oxpheneridinum oxpheneridine	1–(2–phenyl–2–hydroxyethyl)–4–carbethoxy–4–phenyl–piperidine
oxymorphonum oxymorphone	dihydrohydroxymorphinone
phenomorphanum phenomorphan	3–hydroxy–*N*–phenethylmorphinan
proheptazinum proheptazine	1,3–dimethyl–4–phenyl–4–propionoxyhexamethyleneimine
properidinum properidine	1–methyl–4–phenylpiperidine–4–carboxylic acid isopropyl ester
propoxyphenum propoxyphene	4–dimethylamino–1,2–diphenyl–3–methyl–2–propionoxybutane

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Notes

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